IRISH INLAND FISHERIES COMMISSION.

APPENDIX

TO

THE REPORT

OF

THE COMMISSIONERS.

PART II.

DOCUMENTS.

Presented to both Houses of Parliament by Command of [illegible]

DUBLIN:

PRINTED FOR [illegible]

[illegible]

[illegible]

[Cd. 451.] [illegible]

SALE OF GOVERNMENT PUBLICATIONS.

The undermentioned Firms have been appointed sole Agents for the sale of Government Publications, including Parliamentary Reports and Papers, Acts of Parliament, Record Office Publications, &c., &c., and all such works can be purchased from them either directly or through retail booksellers, who are entitled to a discount of 25 per cent. from the selling prices :—

IN ENGLAND :—

For all publications *excepting* Ordnance and Geological Maps, the Hydrographical Works of the Admiralty, and Patent Office Publications :—MESSRS. EYRE AND SPOTTISWOODE, East Harding Street, E.C.

For Geological Maps :—Mr. E. STANFORD, Cockspur Street, S.W.

For Hydrographical Works of the Admiralty :—Mr. J. D. POTTER, 31, Poultry, E.C.

Patent Office Publications are sold at the Patent Office.

For all Publications *excepting* the Hydrographical Works of the Admiralty and Patent Office Publications :—

IN SCOTLAND :—MESSRS. JOHN MENZIES & Co., Rose Street, Edinburgh, and 90, West Nile Street, Glasgow.

IN IRELAND :—MESSRS. HODGES, FIGGIS, & Co., LIMITED, 104, Grafton Street, Dublin.

ORDNANCE SURVEY MAPS OF GREAT BRITAIN AND IRELAND :—There are Agents for the sale of these Maps in most of the chief towns. Copies can also be ordered at many Head Post Offices and through any Bookseller, or from the Director-General Ordnance Survey, Southampton; or, in the case of Ireland, from the Officer in Charge Ordnance Survey, Dublin.

The following is a list of some of the more important Parliamentary and Official Publications recently issued :—

Parliamentary :—

Statutes—

Public General, Session 1899, Sess. 2, and 1900, Sess. 1 and 2. With Index, Tables, &c., &c. Roy[illegible] Cloth. Price [illegible]

Second Revised Edition. A.D. 1235–1713 to A.D. 1872–1883. XV V[illegible] Price 7s. 6d[illegible]

Revised Editions. Tables showing subsequent Repeals, effected by Acts o[f] 62 & 63 Vict. 1899. Price [illegible]

Statutes in Force. Chronological Table of and Index to. 16th Edition. To end of 63 & 64 Vict. Price 10[illegible]

The Statutory Rules and Orders revised. Statutory Rules and Orders other than those of a Local, Per[sonal] or Temporary Character, issued prior to 1890, and now in force. Vols. I. to VIII. Price 10[illegible]

Statutory Rules and Orders other than those of a Local, Personal, or Temporary Character. With a l[ist of] the more important Statutory Orders of a Local Character arranged in classes; and an Index. 8vo. Boards. Issued in the years 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, and 189[9]. Price 10[illegible]

Statutory Rules and Orders in force on 31st December, 1899. Index to. Price [illegible]

Statutory Rules and Orders, 1900. Registered under the Rules Publication Act, 1893. In course of issue.

Index to Local and Personal Acts, 1801–1899. Price [illegible]

Acts of Parliament. Local and Private, Session 1900. In course of issue.

[Cd. 346.] WAGES AND EARNINGS OF AGRICULTURAL LABOURERS IN THE UNITED KINGDOM. Report [illegible] Wilson Fox. With Charts. Years 1850–1900. Price [illegible]

[Cd. 418.] EDUCATIONAL SUBJECTS. Special Reports. Vol. VI. Preparatory Schools for Boys. Their p[lace in] English Secondary Education. Price [illegible]

[Cd. 419.] TECHNICAL AND COMMERCIAL EDUCATION in East Prussia, Poland, Galicia, Silesia, and Bohemia[.] James Baker, F.R.G.S. Pr[ice] [illegible]

[Cd. 42[illegible]] TRADE UNIONS. Report of Chief Labour Correspondent, with Statistics. 1899. Price 1s[illegible]

[Cd. 423.] INDIA AND THE COLONIES. Regulations in Force with regard to Commercial Travellers. Re[port] respecting. Price [illegible]

[Cd. 437.] MINES AND QUARRIES. General Report and Statistics. 1899. Part IV. Colonial and Fo[reign] Statistics. Price 1[illegible]

[Cd. 448.] IRISH INLAND FISHERIES COMMISSION. Report of, on Conditions and Laws. Price [illegible]

[Cd. 45[illegible]] SOUTH AFRICAN HOSPITALS. Report of Royal Commission as to the Treatment of Sick and Wo[unded] during the Campaign. Price [illegible]

[Cd. 1[illegible] and 1[illegible] to 13[illegible]] MINES. Reports of H.M. Inspectors for 1899, with Summaries of the Statist[ical] portion under the provisions of the Coal Mines Regulation Act, 1887; Metalliferous Mines Regulation A[cts,] 1872–1875; Slate Mines (Gunpowder) Act, 1882, Districts Nos. 1 to 13. Complete. Price [illegible]

MINES in the United Kingdom and the Isle of Man. List of, for 1899. Price 3[illegible]

QUARRIES do. do. do. 1899. Price 3s[illegible]

MINES ABANDONED. List of the Plans of. Corrected to 31st December, 1899. Price 1s[illegible]

ACCIDENTS AT DOCKS, WHARVES, AND QUAYS. Report upon. Price [illegible]

The following appear periodically, and can be subscribed for :—

TRADE OF THE UNITED KINGDOM WITH BRITISH POSSESSIONS AND FOREIGN COUNTRIES, showing the Quant[ities] and the Declared Value of the Articles.

TRADE REPORTS of the British Colonies, with information relative to population and general condition.

TRADE REPORTS by His Majesty's Representatives in Foreign Countries, and Reports on Commercial and Gene[ral] Interests.

The Proceedings of Parliament in public and private business, published daily. House of Lords, price [illegible] per 4 pp.; House of Commons, 1*d*. per 8 pp.

IRISH INLAND FISHERIES COMMISSION.

APPENDIX

TO

THE REPORT

OF

THE COMMISSIONERS.

PART II.

DOCUMENTS

Presented to both Houses of Parliament by Command of Her Majesty.

DUBLIN:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY ALEXANDER THOM & CO. (LIMITED)

And to be purchased, either directly or through any Bookseller, from
HODGES, FIGGIS, and Co., Limited, 104, Grafton-street, Dublin; or
EYRE and SPOTTISWOODE, East Harding-street, Fleet-street, E.C., and
32, Abingdon street, Westminster, S.W.; or
JOHN MENZIES and Co., Rose-street, Edinburgh, and 90, West Nile-street, Glasgow

1901.

[Cd. 451.] *Price* 2*s.* 10½*d.*

CONTENTS

Page

LIST OF DOCUMENTS, ... iii

SECTION A.—Statistics I., dealing with (1) License Duty; (2) the amount of Salmon carried by Irish Railways; and (3) the Sale of Salmon at Billingsgate and Kralingsche Veer Market, ... 1

SECTION B.—Answers to Queries, received from Owners and Lessees of Fisheries and Foreign Authorities, ... 14

SECTION C.—Statistics II., mainly returns of catch of Salmon and Trout at various Fisheries, ... 46

SECTION D.—Miscellaneous Documents, ... 75

IRISH INLAND FISHERIES COMMISSION.

APPENDIX TO THE REPORT—PART II.

LIST OF DOCUMENTS.

SECTION A.

STATISTICS.—I.

Number.	Subject of Document	Page.
I.	Documents put in by Mr. Alan Hornsby, one of Her Majesty's Inspectors of Irish Fisheries :—	
	(1.) Quinquennial averages of the number of Licences issued, the amounts received in respect thereof, together with the number of persons employed, and the number of boxes of salmon exported, ...	1
	(2.) Schedule showing the number of Licences issued, the amounts received in respect thereof, together with the number of persons employed, and the number of boxes of salmon exported, ...	4
	(3.) Returns of Salmon and Trout carried by Irish Railways,	8
II.	Documents put in by Mr. Wrench Towse, Fishmongers' Company, London :—	
	(1.) Quantity of Boxes of Salmon delivered at Billingsgate from 1894 to 1899, both years inclusive, . . .	10
	(2.) Number of Boxes of Scotch Salmon received at Billingsgate from 1834 to 1883, both years inclusive, .	10
	(3.) Number of Boxes of Scotch Salmon received at Billingsgate from February to September, from 1884 to 1893, both years inclusive, ...	11
	(4.) Salmon received at Billingsgate during season 1889, .	11
III.	Document put in by Mr. R. E. Longfield, D.L. :—	
	Return of Salmon carried by G. S. and W. R. and the W. and D. R. from the Lismore district from 1896 to 1899, inclusive, with statement showing decrease,	12
IV.	Document put in by Mr. T. Drohan, Secretary to the Lismore Board of Conservators :—	
	Comparison of Licence Duty and Ten per cent. Tax paid on freshwater and tidal portions of the Blackwater in 1895; also a return of the fish sent by rail from Youghal, Cappagh, Cappoquin, and Lismore from 1895 to 1896, inclusive, ...	12
V.	Document put in by Mr. E. L. W. Holt, Marine Naturalist to the Royal Dublin Society :—	
	(1.) Nearest Thousands of Salmon caught at Kralingsche Veer Market, ... *to face*	12

SECTION B.

ANSWERS TO QUERIES.

Number.	Subject of Document.	Page.
VI.	Documents put in by Mr. R. L. Moore, D.L. —	
	(1.) Salmon Fisheries, Ireland. Answers to Queries in respect to Fisheries by Proprietors and Lessees of Fisheries, October, 1899,	14
	(2.) Salmon Fisheries, Ireland. Answers to Queries in respect to Fisheries by Local Inspectors of Fisheries, October, 1899,	16
	(3.) Answers to Queries in respect to Fisheries from :—	
	S. Jaffé, Osnabruck, Germany, Professor Metzger, Germany,	20
	Dr. Hoek, Counsellor to the Government of the Netherlands,	22
	Finland, per British Embassy, St. Petersburg,	24
	Fish Commissioners, State of California,	25
	George M. Bowers, Commissioner, United States, North America,	26
	Marine and Fisheries Department, Victoria, British Columbia,	31
	F. Gourdeau, Deputy Minister, Marine and Fisheries, Ottawa, Dominion of Canada,	32
	Alexander Lumsden, Superintendent, Tay Fisheries,	33
	Chairman of the Severn Fishery Board,	35
	Camel Fishery District,	36
	J. Dickson, Clerk, Tay District, Salmon Fisheries Board,	37
	E. T. Owen, Clerk, Wye Fishery Board,	38
	Joseph Johnston and Sons, letter on fishery matters generally,	39
VII.	Documents put in by Herr Landmark, Chief Inspector of Fisheries, Norway :—	
	(1.) Answer to Queries in regard to the Norwegian Salmon Fisheries,	40
	(2.) Weight of Salmon taken in Norwegian Waters in the Years 1876 to 1898, inclusive (kilogrammes),	42
VIII.	Additional documents put in by Mr. R. L. Moore, D.L. :—	
	(4.) Answers to Queries from R. M. Douglas, Bushmills, for River Bush,	43
	Professor Davidson, for the Rivers Dee and Don (Aberdeenshire),	43
	Tweed Salmon Net Fishery,	44
	John F. Pomeroy, Glenties, for the River Owenea,	45

SECTION C.

STATISTICS.—II.

Number	Subject of Document	Page
IX.	Additional document put in by Mr. R. L. Moore, D.L.:— (5.) Statement of the Produce of Tweed Salmon Net Fisheries disposed of by the Berwick Salmon Fisheries Company (Limited) from 1876 to 1899, inclusive, . .	46
X.	Document put in by Sir Francis Macnaghten:— Bush Fishery Returns. Fish caught, 1888 to 1899, inclusive, ...	47
XI.	Document put in by Sir James Musgrave, Bart., J.P., D.L.:— Comparative Returns of the Teelin Fishery in periods of five years from 1875 to 1899, ...	47
XII.	Document put in by Mr. W. Rochfort, J.P.:— River Suir—Catch of Salmon at Cahir Park Water, from 1883 to 1889, both years inclusive; and at Neddin's Water, from 1876 to 1899, both years inclusive, .	48
XIII.	Document put in by Mr. James Butler, J.P.:— (1.) Waterville Salmon Fishery—Number of Salmon caught, (per month), in the weir and river and in the sea, from 1858 to 1899, both years inclusive; number of trout caught during same period, .	49
XIV.	Document put in by Mr. William Warden, J.P.:— Kenmare Fishery District.—Return showing the number of times the rivers in this district were poisoned from 1890 to 1899, both years inclusive, . .	49
XV.	Additional documents put in by Mr. James Butler, J.P.:— (2.) Return of Salmon and Trout taken in Waterville Fishery between 1805 and 1826, . . (3.) Waterville Fishery—Comparison of Annual Take of Salmon and Grilse, Salmon, Grilse, and Trout, from 1858 to 1874, both years inclusive, with average take of each description for twenty-four years 1875–1898,	50 50
XVI.	Documents put in by Mr. Maurice Davin:— Return of Salmon killed in Coolnamuck Weir, per month, from 1890 to 1899, both years inclusive, . .	51
XVII	Documents put in by Mr. P. L. Petrie.— (1.) Return of Salmon and Trout taken by Draft Nets at Bangor Fishery from 1890 to 1899, both years inclusive, (2.) Return of Salmon and Grilse taken by Draft Nets at Coolcronan Fishery from 1879 to 1899, both years inclusive,	52 52
XVIII	Document put in by Mr. Thomas Guihan:— Number of Salmon taken by Mr. Thomas Guihan in Kenmare with Draft Nets from 1880 to 1899, both years inclusive,	53
XIX.	Document put in by Mr. Villiers Stuart, J.P., D.L.:— Return of Fish taken in Mr. Villiers Stuart's Fishery at Dromana from 1886 to 1899, both years inclusive, .	54
XX.	Document put in by Major Hamilton, J.P.:— Return showing the Number of Salmon caught in the Woodstock Seine Net and Weir from 1889 to 1899, both years inclusive, ...	55

Number.	Subject of Document.	Page.
XXI.	Document put in by Mr. C. W. Osborne :—	
	Return showing the number of fish caught in Mr. Osborne's fishery on the Boyne from 1890 to 1899, both years inclusive, ...	55
XXII.	Document put in by the Right Hon. Lord Courtown :—	
	A Reply to Questions on Net Fishing, and a return of salmon and trout taken in nets on the Onnavarra River from 1879 to 1899, both years inclusive, . .	56
XXIII.	Document put in by Mr. M'Dermott :—	
	Chart giving an Annual Compare for twenty-five years of Salmon and Grilse taken on the following fisheries :—	
	(1.) Blackwater, Lismore,	
	(2.) Blackwater, County Kerry,	
	(3.) Waterville Weir, Currane River, Co. Kerry,	
	(4.) Lanne, below Killorglin Bridge.	
	(5.) Lax Weir, Shannon, twenty-three years,	
	(6.) Bann Nets,	
	(7.) Moy (Tidal),	
	(8.) Foyle Nets,	
	(9.) Erne Nets,	
	(10.) Erne Anglers, . . . *to face,*	56
XXIV.	Additional documents put in by Mr. E. L. W. Holt, Mariue Naturalist to Royal Dublin Society :—	
	(2.) Chart.—Salmon caught by the Aberdeen Harbour Commissioners' Fishery from 1872 to 1893, both years inclusive, arranged in thousands above and below the average annual yield of the whole period, *to face,*	56
	(3.) White Trout Statistics :—	
	Charts.—(*a*) *Inver ;* ratios to an average for 1864 to 1884 in hundreds of fish,	
	(*b*) *Tweed ;* ratios to an average of nearest thousand fish,	
	(*c*) *Foyle ;* percentages,	
	(*d*) *Erne ;* ratios to an average of hundreds of fish ; average weight in different years,	
	(*e*) *Bann ;* percentages,	
	(*f*) *Waterville Weir ;* ratios to an average of hundreds of fish, . . *to face,*	56
	(4.) Table showing the Food of White Trout in the sea, 1899–1900, ...	57
	(5.) Comparative weights of White Trout caught at sea, 1899–1900, ...	61
	(6.) Innisboffin Mackerel Fishery—Number of Trout and Salmon observed from May 14th, 1900, to the end of the Spring fishing, ...	63
	(7.) Return of weight of salmon killed during twelve years in Sands River, Norway, from 1880 to 1893, both years inclusive, ...	64

Number.	Subject of Document.	Page.
XXV.	Document put in by Mr. S C. Vansittart, J.P. :—	
	Record of Salmon and Peal killed at Castleconnell, taken from Fishery Books of the following fisheries :—	
	(1.) Doonas,	65
	(2.) Hermitage,	65
	(3.) Worldsend,	66
	(4.) Woodlands,	66
	(5.) Newgarden,	66
	(6.) Prospect,	67
	(7) Summer Hill and Castle,	67
XXVI.	Document put in by Mr Wilson :—	
	Return of Salmon killed in the Moy (the Moy Fishery Co. only), 1882–1893, inclusive,	68
XXVII.	Documents put in by Miss T. Little :—	
	(1.) Return of catch on Riparian netting, Mullaun Moy Fishery, 1867–1872, and 1885–1890,	68
	(2.) Return of catch in tidal portion of Moy by Messrs. Little & Co. with nets and weirs, 1835–1899,	69
	(3.) Leaf from account book showing receipts for sale of fish from Ballina Fishery, 1832,	69
XXVIII.	Document put in by Mr. R. St. G. Robinson :—	
	Return of catch with nets in Sligo River, 1861–1896,	70
XXIX.	Document put in by Mr. J. W. Scott :—	
	Return of fish caught in Ballysadare Fishery, 1890–1900,	73
XXX.	Document put in by Mr. R. C. Dobbs, J.P. :—	
	Return of catch of Salmon by Mr. R. C. Dobbs in Sheen and Roughty with a draft net, 1894–1896,	73
XXXI.	Document put in by Lieut.-Colonel Coddington :—	
	Return of fish caught in the Old Bridge Fishery, 1874–1899,	74

SECTION D.

MISCELLANEOUS DOCUMENTS.

XXXII.	Additional document put in by Mr. R. L. Moore, D.L. :—	
	(9.) Table of Rainfall at Undermentioned Places from 1894 to 1898, both years inclusive :— Newtownlimavady, Garvagh, Stewartstown, Omagh (Edenfell),	75
XXXIII.	Additional documents put in by Mr. E. L. W. Holt, Marine Naturalist to the Royal Dublin Society :—	
	Marked Fish.—(8.) Table of Marked Fish compiled from various sources, showing apparently possible Variations in the Rate of Growth,	76
	(9.) Table showing observed Increase of Weight (expressed in percentages of the weight of the Kelt) in a single season,	77
	(10.) The apparently possible Weights (up to 31 lbs.) of Clean Fish in ten years after the run of the Parents deduced from the table of marked fish,	78
	(11.) Summary of Marked Salmon, 1898–1900, showing the total number marked in each river; also the number of males and females and the grand total for each year,	79

Number.	Subject of Document	Page.
XXXIV.	Additional documents put in by Mr. Wrench-Towse, Fishmongers' Company, London :—	
	(5.) Form of a Certificate of Origin, . . .	80
	(6.) Form of a Certificate of Origin, designed as a Label for rod-caught fish only, ...	81
	(7.) Form of a Salmon Storage Notice, . . .	81
XXXV.	Documents put in by Mr. J. A. Place :—	
	(1.) Letter from the Limerick Board of Conservators on the Observations of the Commissioners of Public Works as to the effect of the Shannon Drainage on the Fisheries of the District, ...	82
	(2.) Copy of Report of Mr. A. D. Berrington on the Shannon Drainage and the Fisheries, ...	87
XXXVI.	Additional document put in by Mr. Wrench-Towse, Fishmongers' Company, London :—	
	(8.) Suggestions and remarks made by the Secretary to the Worshipful Company of Fishmongers, London, with reference to Irish Fisheries Acts, . . .	89
XXXVII.	Document put in by Captain Hall :—	
	Rules to be observed by Water Bailiffs in the Limerick District, ...	90
XXXVIII	Letter from Mr. Harrison Cripps, F.R.C.S., with reference to angling at Castleconnell, ...	91
XXXIX.	Documents put in by Mr. George Beamish, C.E. :—	
	(1.) Description of Cail's "Lock Swimming Salmon Pass," .	92
	(2.) Plan of Cail's "Lock Salmon Pass," . . *to face,*	92
	(3.) Plan of an "Improved Lock Fish-Pass" by Richard Cail, C.E., adapted to Fermoy Weir by G. H. T. Beamish, Asso. M.I.C.E., . . . *to face,*	92
XL.	Document put in by Major-Gen. Wooley :—	
	Map showing arrangement of mill races on Rivers Glyde and Dee, ... *to face,*	100
XLI.	Documents put in by the Secretary to the Commission :—	
	(1.) Rainfall in Ireland, 1895–1899—Table showing the total average rainfall, ...	94
	(2.) Table showing value of salmon and other fish exported from Ireland, 1893–98, ...	94
	(3.) Table showing (on ten selected Fisheries) their valuations, and the amounts and percentages of rates raised thereon for fishery preservation, and also for purely county purposes, ...	95
	(4.) Table showing General Income and Expenditure of Irish Fishery Boards, specially in connection with Prosecutions, ...	96
XLII.	Additional document put in by Mr. Holt :—	
	Memorandum supplementing his Oral Evidence, . .	98
XLIII.	Document put in by Mr. T. G. P. Hallett :—	
	Memorandum supplementing his Oral Evidence, . .	98
XLIV.	Document put in by Mr. Dinsmore :—	
	Memorandum supplementing his Oral Evidence, . .	101
XLV.	(1.) Memorandum on Nets and Traps for Fish as used in Ireland, ...	103
	(2.) Sketches of Nets and Traps referred to in foregoing Memorandum, ... *to face,*	104
XLVI	Sections of 'Fish and Game Laws" referred to by the Californian Fish Commissioners in their Replies to Queries,	105
XLVII.	Correspondence between the Chairman of the Commission and the Vice-President of the Department of Agriculture and Technical Instruction on the subject of Inland Fisheries, ...	106

IRISH INLAND FISHERIES COMMISSION.

APPENDIX TO THE REPORT.—PART II.

SECTION A.

STATISTICS.—I.

Consisting of Returns of—(1.) The Number of Licences Issued and the Amount of Licence Duty Paid in the various Districts. (2.) The Amount of Fish carried by various Railways or Exported. (3.) The Consignments of Salmon to Billingsgate and Kralingsche Veer Markets.

I.

Documents put in by Mr. Alan Hornsby.

(1.)—Quinquennial Averages of the Number of Licences issued by Boards of Conservators, the Amounts received in respect thereof, &c., as taken from the published Fishery Reports, together with the Number of Persons employed, and the Number of Boxes of Salmon exported.

Period.	Salmon Rod.	Cross Lines	Snap Net.	Draft Net	Drift Net	Fixed Engines.	Total Licence Duty.	Ton per cent Rate.	Total Receipts	No. of Persons Employed.	Boxes of Salmon Exported to some English Markets (1 box = 150 lbs.)
							£	£	£		
1894–98, .	2,749	70	290	914	405	170	10,673	1,015	13,549	13,349	58,354
1893–97, .	2,699	70	296	956	403	170	10,691	1,000	13,523	13,478	58,393
1892–96, .	2,691	64	294	980	396	172	10,684	968	13,483	13,519	58,328
1891–95, .	2,666	65	289	974	390	170	10,630	897	13,234	13,500	57,670
1890–94, .	2,620	70	285	969	384	172	10,542	874	13,107	13,320	57,298
1889–93, .	2,464	75	287	931	405	171	10,318	811	12,774	12,967	55,513
1888–92, .	2,449	88	288	911	405	174	10,341	776	12,708	12,939	55,488

Quinquennial Averages of the Number of Licences issued by Boards of Conservators, the Amounts received in respect thereof, &c.- *–continued.*

Period.	Salmon Rod.	Cross Line.	Snap Net.	Draft Net.	Drift Net.	Fixed Engines.	Total Licence Duty.	Ten per cent. Rate.	Total Receipts.	No. of Persons Employed.	Boxes of Salmon Exported to some English Markets (1 box = 150 lbs.).
							£	£	£		
1887–91, .	2,352	98	292	886	408	177	10,200	770	12,415	12,720	54,662
1886–90, .	2,320	104	296	896	413	183	10,209	726	12,321	12,639	52,821
1885–89,	2,346	109	305	894	420	186	10,357	678	12,443	12,869	51,212
1884–88, .	2,372	112	306	894	397	191	10,348	638	12,428	12,837	50,165
1883–87, .	2,379	110	307	863	408	189	10,169	636	12,312	12,548	51,523
1882–86, .	2,404	120	316	842	416	186	10,196	552	12,389	12,552	47,854
1881–85, .	2,304	122	333	792	416	183	9,949	553	12,209	12,204	48,990
1880–84, .	2,212	121	332	760	411	179	9,611	531	11,878	11,731	48,812
1879–83,	2,154	121	333	750	409	174	9,446	510	11,654	11,597	48,429
1878–82,	2,095	120	333	756	408	170	9,378	501	11,574	11,656	45,522
1877–81, .	2,099	114	322	750	406	169	9,240	513	11,244	11,524	48,532
1876–80, .	2,147	108	306	766	408	165	9,220	494	11,084	11,575	46,837
1875–79, .	2,148	103	310	766	412	162	9,188	488	11,013	11,642	45,588
1874–78, .	2,147	100	325	754	421	161	9,093	528	10,784	11,571	45,308
1873–77, .	2,132	101	313	737	395	160	8,938	524	10,178	11,268	44,501
1872–76, .	2,118	104	315	719	376	158	8,764	546	9,850	11,001	40,390
1871–75, .	2,124	111	305	699	360	155	8,584	564	9,454	10,803	34,447
1870–74, .	2,268	116	295	689	335	151	8,251	515	8,766	10,627	29,164
1869–73, .	2,351	121	282	670	294	144	7,785	437	8,215	10,336	–
1868–72,	2,452	123	283	646	273	140	7,415	406	7,813	10,201	–
1867–71, .	2,600	131	297	647	251	134	7,131	354	7,477	10,308	–

Quinquennial Averages of the Number of Licences issued by Boards of Conservators, the Amounts received in respect thereof, &c.—*continued.*

Period.	Salmon Rod.	Cross Line.	Snap Net.	Draft Net.	Draft Net.	Fixed Engines.	Total Licence Duty.	Ten per cent. Rate.	Total Receipts.	No. of Persons Employed.	Boxes of Salmon Exported to some English Markets (1 box = 150 lbs.)
							£	£	£		
1866–70, .	2,711	136	322	653	215	131	6,824	308	7,124	10,369	–
1865–69, .	2,700	143	356	670	188	122	6,685	289	6,966	10,546	–
1864–68, .	2,739	159	376	676	172	141	6,764	270	6,806	10,750	–
1863–67, .	2,647	189	368	661	141	221	6,562	243	6,806	10,722	–
1862–66, .	2,432	207	350	620	104	298	6,223	203	6,426	10,383	–
1861–65, .	2,228	227	307	578	76	378	5,882	188	6,070	9,987	–
1860–64, .	2,014	250	258	519	54	461	5,593	190	5,783	9,487	–
1859–63, .	1,787	267	227	493	39	521	5,261	189	5,451	7,426	–
1858–62, .	1,663	265	216	489	31	507	5,108	175	5,283	9,013	–
1857–81, .	1,630	269	208	494	28	500	5,039	180	5,219	8,708	–
1856–60, .	1,551	274	206	483	25	483	4,888	177	5,065	8,483	–
1855–59, .	1,447	269	202	474	28	473	4,651	179	4,830	8,239	–
1854–58, .	1,339	265	194	459	27	464	4,346	174	4,521	7,895	–
1853–57, .	1,448	253	184	444	27	451	4,080	185	4,265	7,515	–
1852–56, .	1,120	239	182	426	26	433	3,762	230	3,992	7,368	–
1851–55, .	1,025	229	190	408	26	420	3,504	286	3,791	7,015	–
1850–54, .	938	217	183	383	20	398	3,369	374	3,754	6,747	–
1849–53 .	868	194	166	380	24	399	3,226	399	3,636	6,339	–

(2.)—SCHEDULE showing the Number of Licences issued by Boards of Conservators, Reports, together with the Number of Persons employed,

YEAR.	Salmon Rods.	Cross Lines.	Snap Nets.	Draft Nets.	Drift Nets	Trammels (Pollan)	Pole Nets.	Bag Nets.	Fly Nets	Stake Weirs.	Head Weirs.	Boxes, Cribs, &c.
1898, . .	2,715	56	264	812	404	89	21	45	–	55	2	47
1897, .	2,654	71	288	881	425	89	22	46	–	54	2	42
1896, . .	2,649	75	309	941	426	76	24	49	–	53	2	48
1895, . .	2,621	74	302	939	392	89	17	50	–	54	2	43
1894, . .	3,104	74	285	999	378	96	18	50	–	52	2	48
1893, . .	2,468	55	295	1,020	394	90	21	48	–	53	2	48
1892, . .	2,614	42	281	1,001	392	97	21	49	–	52	2	50
1891, . .	2,521	81	284	910	396	97	24	46	–	46	2	49
1890, . .	2,391	98	278	913	362	74	21	52	–	55	2	49
1889, . .	2,327	97	298	810	479	88	24	32	–	56	2	49
1888, . .	2,391	120	299	920	397	117	32	49	–	58	2	48
1887, . .	2,032	93	300	878	408	115	34	51	–	54	2	48
1886,* . .	2,458	110	306	959	417	113	36	51	–	55	1	51
1885, . .	2,521	123	320	904	401	141	37	51	–	54	1	50
1884, . .	2,460	113	305	811	363	116	36	51	–	55	2	45
1883, . .	2,424	110	305	761	453	90	31	52	–	51	2	43
1882, .	2,156	143	343	777	448	138	30	50	–	51	2	42
1881, . .	1,959	121	393	707	417	115	31	51	–	52	2	41
1880, . .	2,062	119	316	742	373	97	30	50	–	50	1	42
1879, . .	2,170	114	307	761	356	139	29	46	–	48	2	42
1878, . .	2,130	105	306	793	446	114	25	46	–	44	2	41
1877, . .	2,175	112	289	746	437	92	31	46	–	45	2	45
1876, . .	2,196	89	311	787	426	97	25	43	–	42	2	44
1875, . .	2,067	97	336	744	397	107	26	44	–	42	3	45
1874, . .	2,169	95	333	700	398	84	25	46	–	42	3	44
1873, . .	2,054	110	298	706	319	83	22	45	–	43	2	45
1872, . .	2,104	131	267	658	338	90	27	37	–	45	2	45
1871, . .	2,227	124	289	689	346	89	28	29	–	37	3	45
1870, . .	2,787	120	286	693	276	75	29	29	–	32	3	45
1869, . .	2,581	118	270	602	190	73	27	24	–	30	3	43

* Particulars not obtainable from Killarney District in 1886, and therefore

the Amounts received in respect thereof, &c., as taken from the published Fishery and the Number of Boxes of Salmon exported.

Gaps, Eyes, &c.	Sweepers.	Cogbills.	Loop Nets.	Draft Nets (Poilen).	Long Lines for White Trout.	Total Amount of Licence Duty.	Ten per-cent Rate.	Receipts from Fines and Sale of Forfeited Engines, &c.	Subscriptions	Total Receipts.	Estimated Number of Persons employed.	Boxes of Salmon exported to some English Markets. (1 box = 150 lbs.)
						£	£	£	£	£		
449	4	59	26	149	1	10,421	849	702	1,038	13,011	12,749	52,317
349	4	85	24	148	–	10,543	1,064	746	1,203	13,557	13,112	55,685
421	4	61	28	123	–	10,817	1,081	963	1,407	14,270	13,667	61,343
421	4	53	23	–	–	10,448	1,016	671	838	12,973	13,179	61,315
493	4	46	23	–	–	11,138	1,063	656	1,077	13,936	14,038	61,112
375	5	75	21	–	–	10,509	775	680	912	12,877	13,395	52,510
378	5	42	20	–	–	10,506	906	869	1,077	13,360	13,318	55,361
570	3	50	22	–	–	10,550	725	749	998	13,024	13,570	58,054
278	3	41	18	–	–	10,005	901	485	947	12,340	12,280	59,452
269	4	46	21	–	–	10,020	746	572	929	12,268	12 272	52,189
525	3	59	19	–	–	10,625	601	416	903	12,546	13,255	52,384
327	3	49	22	–	–	9,802	878	518	700	11,899	12,223	51,229
301	3	54	25	–	–	10,593	502	511	942	12,550	13,167	48,851
491	4	87	26	–	–	10,746	664	610	932	12,954	13,430	51,407
315	4	58	26	–	–	9,976	545	659	1,008	12,189	12,109	46,955
155	4	100	33	–	–	9,728	592	730	919	11,970	11,810	59,171
358	3	116	21	–	–	9,935	459	992	897	12,284	12 243	32 886
228	5	104	19	–	–	9,362	507	593	1,184	11,647	11,427	54,532
171	5	96	22	–	–	9,055	550	714	980	11,300	11,068	50,517
300	4	102	15	–	–	9,250	442	640	737	11,071	11,436	45,039
257	5	96	6	–	–	9,290	545	865	865	11,566	12,108	44,637
229	24	99	–	–	–	9,241	519	552	324	10,637	11,582	47,934
202	5	141	5	–	–	9,265	412	585	580	10,844	11,681	46,058
255	5	144	3	–	–	8,894	522	645	886	10,949	11,401	44,274
223	5	96	4	–	–	8,776	642	–	–	9,418	11,081	43,638
238	7	168	4	–	–	8,515	525	–	–	9,040	10,593	40,600
255	6	56	4	–	–	8,369	628	–	–	8,998	10,250	27,381
268	7	60	10	–	–	8,364	501	–	–	8,865	10,690	16 340
291	7	66	11	–	–	7,233	278	–	–	7,511	10,520	17,861
288	5	87	6	–	–	6,444	255	–	–	6,660	9,629	–

the above figures include items equal to the similar items of 1885.

(2.)—SCHEDULE showing the Number of Licences issued by Boards of

YEAR.	Salmon Rods	Cross Lines.	Snap Nets.	Draft Nets	Drift Nets.	Trammels (Poilen).	Pole Nets.	Bag Nets.	Fly Nets.	Stake Weirs.	Head Weirs.	Bo es, Cribs, &c.
1868, . .	2,560	123	304	587	217	96	29	24	–	35	3	44
1867, . .	2,845	169	335	665	224	98	32	23	–	29	3	42
1866, . .	2,780	151	414	718	170	65	35	23	–	22	3	45
1865,	2,736	156	457	776	139	96	20	19	–	9	3	42
1864, . .	2,772	194	370	634	109	78	44	63	1	38	14	60
1863, . .	2,101	277	262	510	64	109	37	251	31	95	49	74
1862, . .	1,771	256	248	462	36	128	34	252	17	90	50	71
1861, .	1,758	254	200	506	31	190	36	255	24	80	50	79
1860, .	1,669	271	210	484	32	204	35	240	29	81	47	80
1859, .	1,638	277	217	504	30	262	50	238	17	81	50	81
1858,	1,481	269	204	488	26	229	32	217	13	83	44	78
1857, . .	1,605	276	210	489	20	197	22	234	22	80	47	76
1856, . .	1,360	276	187	452	15	224	22	203	15	82	44	71
1855, . .	1,150	247	192	438	48	223	16	192	48	85	48	75
1854, . . .	1,100	255	176	429	27	162	23	201	40	89	43	75
1853, . .	1,026	209	156	410	24	104	11	172	27	75	38	80
1852,* . .	964	207	200	400	18	159	12	163	11	76	39	87
1851, . .	886	226	228	363	14	147	29	141	8	78	43	75
1850,† . .	715	189	154	314	17	110	10	158	4	65	37	81
1849, . .	748	140	91	413	46	10	25	175	32	101	48	93

* 52 Drogheda—No particulars

† Drogheda—No particulars for 1850, those for 1849 taken as for 1850. Limerick—No details of Licensed Engines available, but the total

Conservators, the Amounts received in respect thereof, &c.—*continued.*

Gaps, Byes, &c.	Sweepers.	Cogbills	Loop Nets.	Draft Nets (Pollen)	Long Lines for White Trout.	Total Amount of Licence Duty.	Ten per cent. Rate	Receipts from Fines and Sale of Forfeited Engines, &c	Subscriptions.	Total Receipts	Estimated Number of Persons employed.	Boxes of Salmon export ed to some English Markets. (1 box=160 lbs.)
						£	£	£	£	£		
350	5	–	8	–	–	6,667	366	–	–	7,033	9,916	–
279	7	25	5	–	–	6,947	370	–	–	7,317	10,785	–
256	7	68	9	–	–	6 828	269	–	–	7,098	10,996	–
350	4	59	9	–	–	6,537	185	–	–	6,722	11,406	–
405	6	67	3	–	–	6,841	160	–	–	7,001	10,649	–
343	3	70	–	–	–	5,659	233	–	–	5,892	9,774	–
250	1	57	1	–	–	5,250	166	–	–	5,416	9,090	–
321	1	61	6	–	–	5,125	195	–	–	5,321	9,017	–
352	4	53	12	–	–	5,088	198	–	–	5,287	8,905	–
426	5	63	–	–	–	5,183	154	–	–	5,337	9,344	–
424	7	66	–	–	–	4,892	163	–	–	5,055	8,709	–
357	7	55	–	–	–	4,906	189	–	–	5,095	7,564	–
297	6	39	2	–	–	4,369	181	–	–	4,550	7,895	–
286	6	42	6	–	–	3,903	210	–	–	4,113	7,685	–
394	32	–	–	–	–	3,661	129	–	–	3,790	7,622	–
379	6	24	12	–	–	3,561	218	–	–	3,779	6,809	–
352	5	22	1	–	Eel Nets 6 Tram-mels £5	3,314	413	–	–	3,728	6,827	–
255	28	4	–	–	2	3,083	461	–	–	3,544	6,132	–
100	2	–	–	–	–	3,224	650	–	–	3,927	6,345	–
129	–	–	–	–	–	2,950	252	–	–	3,202	5,582	–

last year taken

amount for Licence is included. Skibbereen and Bantry—No details of Licensed Engines available, but the total amount received is included.

(3.)—RETURNS of SALMON and TROUT carried by IRISH RAILWAYS, as taken from

YEAR	Great Southern and Western Railway.	Midland Great Western Railway.	Great Northern and Western Railway.	Irish North Western Railway.	Dublin and Drogheda Railway.	Dublin and Belfast Junction Railway.	Ulster Railway.	Portadown, Dungannon, and Omagh Railway.	Carrickfergus and Larne Railway.	Belfast and Northern Counties Railway.	Ballycastle Railway.	Great Northern Railway.	Dundalk, Newry, and Greenore Railway.	Belfast and County Down Railway.	Londonderry and Lough Swilly Railway.	Finn Valley Railway.	West Donegal Railway.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons	Tons.	Tons.	Tons.	Tons.	Tons	Tons	Tons	Tons	Tons	Tons.
1852	129	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1853	275	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1854	247	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1855	311	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1856	314	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1857	304	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1858	243	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1859	298	82½	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1860	212	14½	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1861	157	12½	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1862	247	98½	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1863	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1864	312	139½	–	–	109 boxes and 936 hampers.	–	–	–	–	–	–	–	–	–	–	–	–
1865	280	117	–	128½	24½	–	–	–	–	–	–	–	–	–	–	–	–
1866	383	122½	–	194	20½	–	–	–	–	–	–	–	–	–	–	–	–
1867	132	74½	–	66	13	–	–	–	–	–	–	–	–	–	–	–	–
1868	133	76	–	74	15½	7	–	–	–	–	–	–	–	–	–	–	–
1869	285	83½	–	115 276 boxes and 102 baskets	–	10½	–	–	–	331½	–	–	–	–	–	–	–
1870	258	No separate Return given.	–	No separate Return given	136 boxes and 151 baskets	95 boxes and 280 baskets.	–	–	–	5,546 boxes & 206 baskets.	–	–	–	–	–	–	–
1871	150	1 878 boxes, 224 baskets	–	172½	29½	11½	–	–	–	4 121 boxes & 495 baskets.	–	–	–	–	–	–	–
1872	186	No separate Return given.	–	4	23½	10½	–		–	2,443 boxes & 257 baskets.	–	–	–	–	–	–	–
1873	338	689½	47½	183	49½	20½	21½	–	88 boxes and 86 baskets	4 418 boxes & 229 baskets.	–	–	–	–	3½	4½	–
1874	292	247½	Included in M G. W. Ry.	10½	73	13½	12½	63½	92 boxes and 114 baskets.	3,637 boxes & 245 baskets.	–	–	–	–	15	3½	–
1875	283	115½	107½	97½	–	–	20¾	–	62 boxes and 232 baskets.	4 050 boxes & 326 baskets.	–	–	–	–	20½	1½	–
1876	158	645½	–	–	–	–	–		–	512½	–	190½	138½	–	19½	4½	–
1877	300	396½	271½	–	–	–	–	–	133½	477	–	–	114	–	36½	2½	–
1878	No trace of Returns.		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1879	do	57½	138½	–	–	–	–		73½	222½	–	261	65½	–	7½	1	–
1880	No trace of Returns.		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1881		do.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1882		do.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1883		do	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1884		do	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1885	–	582	–	–	–	–	–	–	251½	618½	–	271½		–	30½	5	31
1886	–	–	–	–	–	–	–	–	149	392½	–	198½	3	–	–	2½	61½
1887	–	435½	–	–	–	–	–	–	4½	284	–	201½	11½	–	20½	1½	36
1888	–	513½	–	–	–	–	–	–	–	–	–	–	4	–	–	2½	65½
1889	–	482½	–	–	–	–	–	–	5½	360½	–	185½	5½	–	24	2½	52½
1890	–	498½	–	–	–	–	–	–	–	538	–	237½	216½	¼	50½	6½	–
1891	–	576½	–	–	–	–	–	–	–	515½	–	173½	131½	–	42½	3½	107
1892	–	000	–	–	–	–	–	–	–	303	17	162½	–	–	25½	–	69½
1893	438½	237½	–	–	–	–	–	–	–	262	37½	52½	–	–	35	–	40½
1894	527½	331	–	–	–	–	–	–	–	337	26½	147	–	–	36½	–	147½
1895	704	235½	–	–	–	–	–	–	–	309½	46½	154½	–	–	30½	–	93½
1896	216½	291½	–	–	–	–	–	–	–	473	21½	164½	–	–	74½	–	81½
1897	331½	298½	–	–	–	–	–	–	–	284½	11	89½	–	–	43	–	41
1898	399	177	–	–	–	–	–	–	–	255½	7½	73½	–	–	33½	–	39

the published Fishery Office Reports, calculated to the nearest Quarter of a Ton

Enniskillen, Bundoran, and Sligo Railway.	Sligo, Leitrim and Northern Counties Railway.	West and South Clare Railway.	Waterford and Limerick Railway.	Limerick, Castleconnell, and Killaloe Railway.	Limerick and Foynes Railway.	Listowel and Ballybunion Railway.	Tralee and Dingle Railway.	Tralee and Fenit Railway.	Newcastle and Tralee Railway.	Limerick and Kerry Railway.	Cork, Bandon, and South Coast Railway.	West Cork Railway.	Cork, Blackrock, and Passage Railway.	Kilkenny Junction Railway.	Waterford and Central Ireland Railway.	Waterford, Dungarvan, and Lismore Railway.	Dublin, Wicklow, and Wexford Railway.	Limerick and Ennis Railway.	Total.			YEAR.
Tons	Tons	Tons	Tons.	Tons.	Tons	Tons.	Tons.	Tons.	Tons	Tons.	Tons.	Tons.	Tons	Tons	Tons	Tons	Tons	Tons.	Tons.	Boxes.	Baskets	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	129	-	-	1852
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	275	-	-	1853
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	247	-	-	1854
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	311	-	-	1855
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	314	-	-	1856
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	304	-	-	1857
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	243	-	-	1858
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380½	-	-	1859
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226¾	-	-	1860
-	-	-	210½	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	-	-	1861
-	-	-	336	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	681½	-	-	1862
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1863
-	-	-	140	-	123	-	-	-	-	-	-	-	-	-	-	-	-	-	714½	109	836	1864
-	-	-	134½	-	106	-	-	-	-	-	-	-	-	-	-	-	3½	-	793¾	-	-	1865
-	-	-	168½	-	184¾	-	-	-	-	-	-	-	-	-	-	-	18¾	-	1,092	-	-	1866
-	-	-	246½	-	-	-	-	-	-	-	-	-	-	-	-	-	12¾	-	1,249¾	-	-	1867
-	-	-	203	-	-	-	-	-	-	-	-	-	-	-	-	-	9¾	-	818¼	-	-	1868
-	-	-	4½ 14,533 boxes & 1,961 baskets.	-	-	-	-	-	-	-	-	-	-	-	-	-	10½	-	840½	14,809	2,083	1869
-	-	-	4,337 boxes & 269 baskets.	-	-	-	-	-	-	-	-	313 boxes & 104 baskets	-	-	-	-	10½	-	268¾	10,427	1,010	1870
-	-	-	-	-	181½	-	-	-	-	-	-	-	-	-	-	-	7¼	-	552	5,999	719	1871
114½	-	-	45½	-	-	-	-	-	-	-	-	6½	-	-	-	-	8	-	398	2,443	257	1872
182¾	-	-	165¼	½	186½	-	-	-	-	-	-	-	-	-	12½	-	18	-	1,900	4,506	315	1873
116½	-	-	139¾	-	144	-	-	-	-	-	-	-	-	-	15¼	-	14½	-	1,171	3,729	359	1874
-	-	-	379	-	-	-	-	-	-	-	-	-	-	-	11¼	-	3½	-	1,040¼	4,112	608	1875
-	-	-	295¾	-	-	-	-	-	-	-	2¾	20	-	½	-	-	8	-	1,996¾	-	-	1876
-	-	-	321½	-	-	-	-	-	-	-	-	-	-	¼	15¾	-	3¼	-	2,072	-	-	1877
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1878
-	-	-	101	½	137¾	-	-	-	-	-	5½	-	-	½	28	19¾	1½	-	1,120¾	-	-	1879
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1880
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1881
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1882
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1883
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1884
-	-	-	-	-	-	-	-	-	-	-	36¼	-	-	½	26¼	25½	15½	-	1,937¾	-	-	1885
-	-	-	270	2¼	-	-	-	-	-	-	33¼	-	-	-	19¼	24	15	1¼	1,172¾	-	-	1886
-	-	-	-	-	-	-	-	-	-	-	45½	-	-	-	20	31¾	17½	-	1 106¼	-	-	1887
-	-	-	-	-	-	-	-	-	-	-	37	-	-	-	9¼	15	21	-	671¼	-	-	1888
-	-	-	251	1½	83¾	-	-	-	-	52¾	37¾	-	-	-	8½	53¾	30¼	-	1,637	-	-	1889
-	-	-	-	-	-	-	-	-	-	-	28	-	-	-	11½	57½	12¾	-	1,658	-	-	1890
-	-	-	154½	1½	110	-	-	½	-	108¾	34¾	-	-	-	11¼	71¼	-	-	2,042¼	-	-	1891
-	-	-	288¾	2¾	-	-	-	-	-	69½	38¾	-	-	-	14½	82½	67	-	1,696½	-	-	1892
-	-	94	229½	1	-	-	-	-	25	-	33	-	-	-	7½	118½	58¾	-	1,700½	-	-	1893
-	5¾	134¼ 119 boxes and 20 baskets	216	3½	-	-	1½	67¾	-	-	57¼	-	-	-	5¼	108	40½	-	2,133	119	30	1894
-	5¾	109	229½	-	-	-	2	-	-	44¾	31¾	-	½	-	5½	120½	129		2 29[illegible]¾	-	-	1895
-	8	103½	207	-	-	4	¼	-	-	32	29½	-	-	-	5½	91¾	116		1 921¼	-	-	1896
-	4¾	63¾	113½	-	-	3½	¼	-	-	29½	18	-	-	-	8	59¾	30	-	1,372¼	-	-	1897
-	3	63¼	99¾	-	-	2¾	-	-	-	20¼	11¼	-	½	-	6	-	26¼	-	1,238	-	-	1898

II.

Documents put in by Mr. Wrench-Towse.

(See the Evidence of Mr. Wrench-Towse, qq. 609–16.)

(1.)—Quantity of Boxes of Salmon delivered at Billingsgate from the beginning of 1894 to the end of 1899 (six years).

Year.	English	Scotch.	Irish.	Dutch	French.	Norwegian	Danish and German.	Canadian.	Total.*
1894, . .	1,717	15,489	9,255	1,289	215	766	53	12	28,796
1895, . .	2,706	25,364	7,396	547	89	671	59	69	36,901
1896, . .	2,116	22,435	6,545	623	50	898	81	304	33,052
1897, . .	1,904	16,284	4,132	911	27	2,047	180	309	25,794
1898, . .	1,303	14,174	3,660	1,030	21	1,391	18	147	21,744
1899, . .	1,687	15,411	4,265	554	.	1,251	11	212	23,391

* From January to October inclusive.

(2.)—Return showing Number of Boxes of Scotch Salmon received at Billingsgate during the Years 1834 to 1883 (inclusive).

Year.	Number.	Year.	Number.	Year.	Number.
1834	30,650	1851	11,593	1868	28,020
1835	42,330	1852	13,044	1869	20,474
1836	24,570	1853	19,485	1870	20,648
1837	32,300	1854	23,194	1871	23,390
1838	21,400	1855	18,197	1872	23,028
1839	16,340	1856	15,438	1873	28,317
1840	15,160	1857	18,654	1874	31,056
1841	28,500	1858	21,564	1875	19,593
1842	39,417	1859	15,630	1876	24,655
1843	30,300	1860	15,870	1877	28,189
1844	28,178	1861	12,337	1878	26,465
1845	31,062	1862	22,796	1879	13,929
1846	25,510	1863	24,297	1880	17,457
1847	20,112	1864	22,603	1881	23,905
1848	22,525	1865	19,009	1882	22,968
1849	23,690	1866	21,725	1883	34,506
1850	13,940	1867	23,006		

(3.)—NUMBER of BOXES of SCOTCH SALMON received at BILLINGSGATE from February to September (inclusive), 1884 to 1893 (inclusive).

Year.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
1884, .	1,335	1,402	1,973	3,162	3,821	8,765	6,070	691	27,219
1885, .	879	1,116	1,886	2,257	3,863	10,582	9,151	628	30,362
1886, .	841	1,008	1,744	2,485	2,896	8,045	5,777	611	23,407
1887, .	717	797	1,456	2,432	3,531	9,544	7,794	636	26,907
1888, .	535	899	1,096	2,603	3,953	7,943	5,474	386	22,889
1889, .	691	1,006	1,152	1,859	3,829	7,414	4,826	326	21,103
1890, .	612	902	952	1,844	3,127	7,148	4,035	311	18,931
1891, .	934	1,116	1,403	2,591	4,140	8,007	7,028	670	25,889
1892, .	1,078	1,688	1,657	2,125	2,438	6,259	6,064	610	21,919
1893, .	557	773	845	1,997	3,802	5,786	4,722	421	18,863

(4.)—SALMON received at BILLINGSGATE during Season 1889.

Month.	Scotch	Irish.	English.	Norwegian.	Swedish.	Danish.	Dutch.	Packages.	Lbs.
February, .	670	131	82	.	.	.	246	1,129	180,910
March, . .	1,003	319	99	.	.	.	199	1,620	259,680
April, . .	1,144	504	69	.	3	.	154	1,874	300,260
May, . .	1,902	729	182	128	16	17	74	3,048	487,610
June, . .	3,806	2,277	375	523	16	12	1	7,010	1,122,060
July, . .	6,979	2,668	303	233	48	.	2	10,233	1,626,100
August, .	4,607	413	208	.	.	.	.	5,228	832,750
September, .	222	12	11	.	.	.	.	245	39,130
	20,333	7,053	1,329	884	83	29	676	30,387	4,848,500

III.

Document put in by Mr. R. E. Longfield, J.P., D.L.

(See Mr. Longfield's Evidence, qq. 1111–12.)

Return of Salmon carried by G. S. & W. R. and the W. & D. R. from the Lismore District, from 1896–1899, with Statement showing decrease.

The Quantity of Salmon sent from		Tons.	cwt.	qrs.	lbs.
Lismore in	1896, . .	40	0	0	0
	1897, . .	28	0	0	0
	1898, . .	22	0	0	0
	1899, . .	22	0	0	0
Cappoquin,	1896, . .	32	6	3	24
	1897, . .	20	4	1	0
	1898, . .	22	0	3	12
	1899, . .	15	14	2	0
Cappagh,	1896, . .	19	9	1	0
	1897, . .	18	17	3	7
	1898, . .	7	18	3	12
	1899, . .	5	17	3	21

The Quantity of Salmon sent from		Tons.	cwt.	qrs.	lbs.
Youghal,	1896, . .	150	10	3	0
	1897, . .	104	14	2	24
	1898, . .	86	18	1	0
	1899, . .	99	5	1	0

Decrease in Quantity between 1896 and 1899.

Lismore, ...	45 %
Cappoquin, ...	50 %
Cappagh, ...	70½ %
Youghal	34 %
Total decrease in the above four districts, ...	41 %

IV.

Document put in by Mr. T. Drohan.

(See Mr. Drohan's Evidence, qq. 1307–13.)

Comparison of Licence Duty and Ten per Cent. Tax paid on the Freshwater and Tidal portions of the Blackwater in 1895, also a Return of the Fish sent by rail from Youghal, Cappagh, Cappoquin, and Lismore in 1895–96.

Licence Duties.

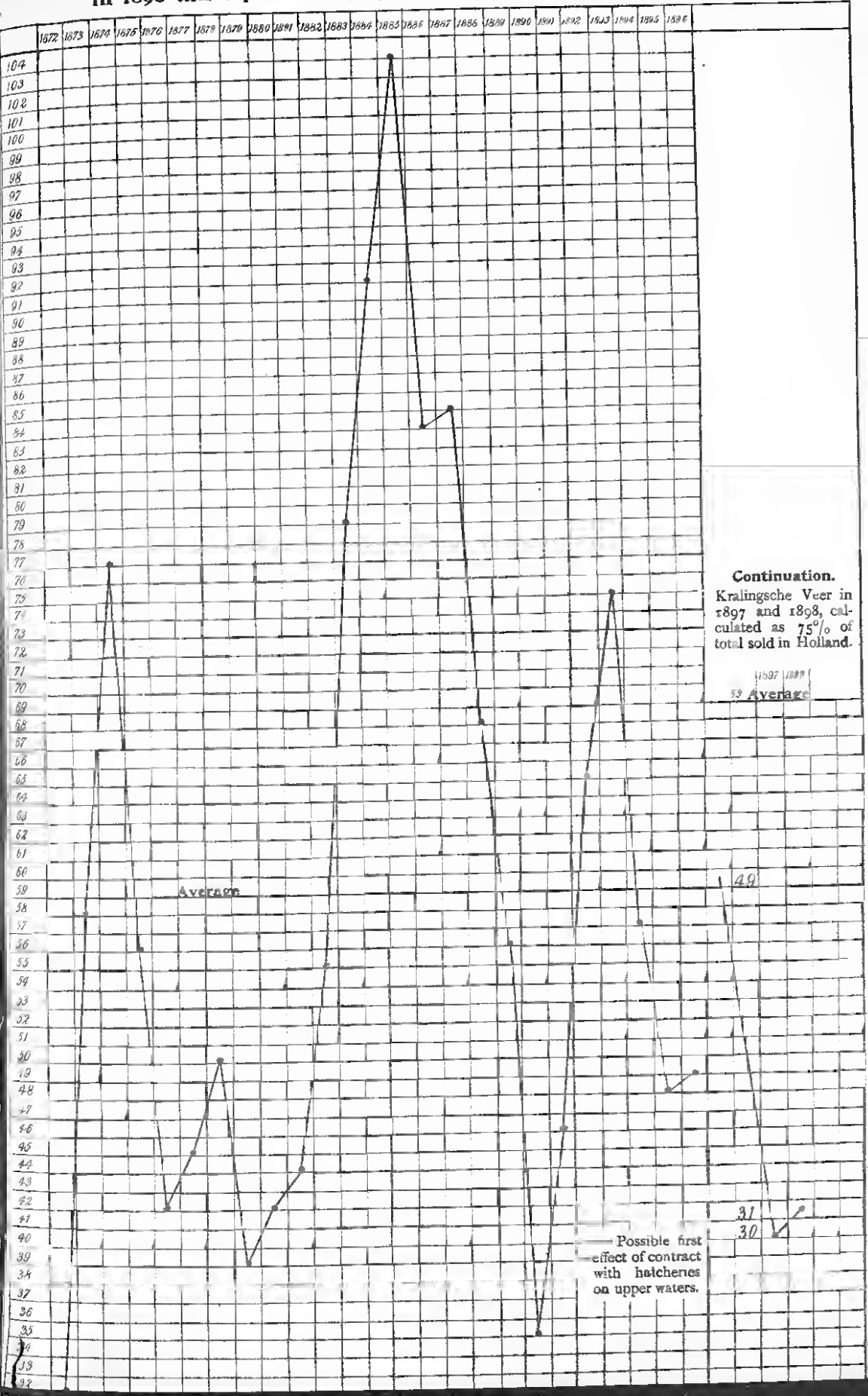
Freshwater.	£	s.	d.	Tidal.	£	s.	d.
Salmon rods, 275, . . .	275	0	0	Snap nets, 29, . . .	43	10	0
Cross lines, 6, . . .	12	0	0	Draft ,, 22 . . .	66	0	0
				Drift ,, 87 .	261	0	0
				Stake ,, 2 . . .	60	0	0
				Bag ,, 1 . .	10	0	0
				Pole ,, 1, . . .	2	0	0
	£287	0	0		£442	10	0

Document put in by Mr. E. L. W. HOLT, Marine Naturalist to the Royal Dublin Society

(See the Evidence of Mr. HOLT, q. q. 5915-18)

Rhine.

Nearest Thousands of Salmon sold (1) at Kralingsche Veer Market.
In 1898 this represented 75% of the total Sold in Holland.



TEN PER CENT. TAX.

	£	s.	d.		£	s.	d.
Gross amount, . . .	160	14	0	Gross amount, . . .	159	5	0
By Licences allowed, . . .	9	0	0	By Licences allowed, . . .	77	12	0
	£151	14	0		£81	13	0
Net total paid by Freshwater,	£438	14	0	Net total paid by Tidal,	£524	3	0

RETURN of FISH despatched from YOUGHAL, CAPPOQUIN, CAPPAGH, and LISMORE.

	Tons	cwts.	qrs		£	s.	d.
Fish sent from Youghal in 1895, . .	172	0	0, at 1s. per lb., . . .		19,264	0	0
„ „ in 1896, . .	151	0	0, „ . . .		16,912	0	0
„ Cappoquin in 1895, . .	36	17	3, „ . . .		4,109	0	0
„ „ in 1896, . .	30	17	0, „ . . .		3,855	4	0
„ Cappagh in 1895, . .	23	12	3, „ . .		2,647	8	0
„ „ in 1896, . .	19	9	1, „ . . .		2,179	16	0
„ Lismore in 1895, . .	46	10	0, „ . . .		5,208	0	0
„ „ in 1896, . .	39	18	0, „ . . .		4,468	6	0
Total value of Fish taken in Tidal portion in 1895–96, ...					£58,644	4	0
Amount taken in Freshwater, about 5 tons per annum, value at 1s. per lb. for 1895–96,					£1,120	0	0

APPENDIX TO THE REPORT—PART II.

SECTION B.

Consisting of Answers to Queries received from Owners and Lessees of Fisheries, Inspectors of Fisheries, and Foreign Authorities.

VI.

Documents put in by Mr. R. L. Moore, J.P., D.L.

(1.) A.—Salmon Fisheries, Ireland.—Answers by Proprietors and Lessees of Fisheries. October, 1899.

(See the Evidence of Mr. Moore, q. 217.)

—	Fishery District.	1 Has your fishery been prosperous or otherwise during late years?	2 If not prosperous, when did the decline commence?	3. Take an average of last twenty-four years to end of 1898, can you give for each of such years the per-centage of increase or decrease as compared with such average?	4 What description of engines are used in your Fishery?	5. About what proportion of fish escape your fishing engines to the upper waters? 1st During the 5 days in the week's fishing 2nd During the weekly close time 3rd. From end of netting season to close of angling 4th. After the angling season closes	6 Are there any nets fished in the fresh waters above your fishery, and, if so could you tell the number and where they are used? and what proportion of the escaped fish do these capture?	7 Has the better drainage of land caused irregularity in the water and so injuriously affected the angling?
1	Lismore (Blackwater . . .	Prosperous until 1896.	In 1896	Yes	Draft nets one crib, one snap net, occasionally.	It is impossible to estimate this.	None legally.	Water rises and falls more suddenly.
2	Kenmare (Blackwater), . .	Prosperous	—	Yes.	Draft and sweeper nets.	Cannot tell,	No.	Not in this case.
3	Limerick (Shannon—Lax Weir).	The ten years ending July, 1896 were more prosperous than the ten years ending July, 1886, but 1897, 1898 and 1899 were not prosperous	In 1897.	Yes See chart	A stone weir, with cribs, known as the "Lax Weir," and draft and snap nets.	Impossible to tell.	Snap nets are used largely between Limerick and Killaloe. Draft nets are used about Athlone and above it.	Yes, very much so.
4	Ballina (Moy).	Not so prosperous as before 1863	Decline consequent on Fisheries Act, 26 & 27 Vic., c. 114	Yes.	Weir, draft net, and fixed draft net in river; bag net on coast.	1st and 2nd could be estimated by average loss since 1864; 3rd and 4th, sufficient for propagation.	Over twenty.	No.
5	Sligo (Sligo).	—	1897	—	Fixed and draft nets.	About one-third.	None.	No.
6	Ballyshannon (Erne). . .	Bad during 1897 and 1898	1897.	Yes See chart.	Three draft nets, one stake net, and three boxes.	About two-fifths of total.	None, except by poachers.	In 1883 large drainage works were completed at Belleek and since gates erected, which have very injuriously affected the angling as river is now subject to great floods and very low water which takes the fish off their regular resting places.
7	Letterkenny (Buncrana). .	Not prosperous for the past twenty years but a little improvement in 1899	About twenty years ago We only get about half the quantity that was taken before making the Queen's Gap.	No.	Draft net.	1st, ten per cent.; 2nd, ten per cent.; 3rd and 4th thirty per cent.; or fifty per cent. of total.	No.	It has owing to the rapid rise and fall.
8	Londonderry (Foyle). .	Bad for years 1897 and 1898	1897 but very good during 1894, 1895, and 1896	Yes See chart	Three stake nets and sixteen draft nets.	No 1. four per cent. of total. No. 2. two-sevenths of total. No. 3 one tenth of total. No. 4 one twelfth of total. or, in all, half of total.	Four nets—two pole nets on Mourne, one pole net on Finn, one draft net on Roe.	The floods rise more rapidly and subside faster, consequently the salmon lie more in the pools, and don't give sport.
9	Coleraine (Bann). . .	Not prosperous for about twelve years.	1886	Yes. See chart.	Four draft nets and four fishing weirs.	About half of total.	Yes. Two draft nets in Lough Neagh off the mouth of the Maine river.	—

A.—Salmon Fisheries, Ireland.—Answers by Proprietors and Lessees of Fisheries—*continued*.

—	Fishery District	8. Are there any hatcheries erected on the river in which you are interested? If so, how long have they been in operation? and where are they situated, and by whom have they been erected?	9. Can you give, as approximately as possible the number of ova placed in each hatchery each year?	10. Have you found of late salmon running larger or smaller, or does their size remain uniform? and are salmon running earlier in your rivers than formerly?	11. Enclosed are two Bills on Fisheries introduced to the House of Commons this Session. Please read them over, and say if you think it would be desirable to press their adoption on His Excellency the Lord Lieutenant's forthcoming Commission. Can you suggest how those Bills should be altered or amended so as to make them more beneficial?	12. Please give any suggestions as to the better protection and increase of salmon?
1	Lismore (Blackwater),	One hatchery erected in 1883 by the lessees of the Lismore fishery.	The hatchery would hold about 500,000.	No change in size nor in time of running.	Both useful and no objection to any of their clauses.	Heavier penalties for poaching.
2	Kenmare (Blackwater).	Yes. Over twenty years. Situated midway between the source of the river and tidal waters. Erected by the owner of the fishery.	Would hold about 100,000.	For many years about the same.	—	The funds at the disposal of the Boards of Conservators are insufficient to provide efficient protection, and unless some plan for augmenting these funds is adopted, either by increasing the license duty or obtaining help by other means, the efforts at protecting will not be effectual. The law should be strengthened to put down poisoning and poaching, and firmly administered. If these things are done, and hatcheries on an inexpensive plan set up on all salmon rivers, the results will soon be very apparent in the improved condition of the fisheries.
3	Limerick (Shannon—Lax Weir).	None for salmon.	No salmon hatchery.	The average size of salmon has decreased within the last two or three years. This chiefly applies to peal.	The Bills are satisfactory, and should be pressed forward.	Improvement in the Shannon passes. Increased protection, if funds available. Coastguards and constabulary to take more active part in preservation. Stop all further rights of fishing in fresh waters. Stop remission of penalties. Establishment of hatcheries by Government as Government already largely assist sea fisheries. That Government should provide funds for scientific research into habits and food of salmon.
4	Ballina (Moy)	No.	—	No change.	—	More assistance from the police. The concentration of the fisheries of a river, as recommended by former Commissioners—Sir John Stewart Richardson, &c.
5	Sligo (Sligo).	No.	No.	Salmon, for the last ten years, are running earlier.	—	Preventing small mesh herring nets being fished at the mouth of rivers.
6	Ballyshannon (Erne) . .	Yes, in 1881, at Cliff, Belleek, by the proprietors of the Erne.	Varying from 1,743,000 in 1885 to 80,000 in 1897.	—	—	It is most important that adequate minimum penalties should be provided for every offence under the Fishery Laws, as in many cases nominal fines only are inflicted, which have no deterrent effect, and the funds of the Conservators are wasted in fruitless prosecutions.
7	Letterkenny (Buncrana) . .	No.	No.	This year the average is larger than for the past ten years.	Most important Bills, and should be passed.	All trawlers and drift nets should be prohibited from coming within two miles of the mouth of any salmon breeding river.
8	Londonderry (Foyle), . .	Yes, for final four years, at Newtownstewart, on the Mourne river, erected by lessees of Foyle fishery.	Over 800,000 a year for four years.	Practically uniform, but in 1898 were smaller than usual.	The passing of these Bills would be very beneficial to the fisheries.	Deterrent minimum penalties should be fixed. Constabulary circular of 1858 should be re-issued. Coastguards should be instructed to look after unlicensed nets and breaches of the weekly close time.
9	Coleraine (Bann) . .	Yes, one in 1891, at Portna, near Kilrea, by the lessees of the Bann fishery.	One million.	No change observed.	These Bills should be passed into law.	Substantial minimum penalties should be fixed for all offences against the Fishery Laws.

(2.) B.—Salmon Fisheries, Ireland.—Answers by Local Inspectors of Fisheries. October, 1899

(See the Evidence of Mr. Moore, q. 217.)

--	Fishery District	1 How many years have you been engaged in salmon protection? And during your time have you observed any remarkable change in the times of spawning?	2 What rivers have you the supervision of? Give their length. And are there any in your neighbourhood that have no or very little supervision? Name them, and give their mileage.	3 Give as much detailed information as possible as to the particular way in which water bailiffs are engaged in your district in protection, and for what time in the year the bailiffs are employed.	4 Have you any rivers not frequented by salmon? If so, state, if you can, the cause.	5 Give number of weirs (or mill dams) on each river, and state if there is any difficulty for salmon to cross such, and if you can suggest any improvement.
1	Lismore (Blackwater River). .	—	The Blackwater and Tributaries. About 600 miles. All fairly protected.	—	No.	There are two mill weirs above Lismore, which are serious obstructions, and should be improved.
2	Limerick (Shannon River). . .	No change	Shannon, Suck, Inny, and Brosna. About 400 miles. Some of these have very little protection. Only two men watching the Suck and Tributaries, about ninety miles.	Ten bailiffs on the Shannon in close season, two on the Suck, two on the Inny, two on Lough Ree, and one on the Little Brosna. The supervision of a bailiff would be from twenty to fifty miles.	The Fallan and Ballinacel have no salmon, believed to be owing to the bog water.	Four weir walls on the Shannon, and it is difficult for fish to pass up at Athlone and Termonbarry.
3	Ballina (Moy River).	Thirty-one years. Spawning is later than it was thirty years ago.	Moy and Tributaries. About 300 miles. All have more or less protection.	Bailiffs are employed from November to June, with local Inspectors to supervise them.	No.	Fifteen to twenty weirs.
4	Sligo (Sligo River).	Twenty years. I have not observed any change in the time of spawning.	Sligo and its Tributaries.	Twenty four in close season and five in the open season.	No.	Four weirs.
5	Ballyshannon (Erne River). . .	Forty-nine years. No change in times of spawning.	Two hundred and forty-four miles of rivers Erne and Tributaries. All are protected.	About 180 bailiffs are employed, the greater number of these during the spawning season.	No.	Forty-three weirs. Salmon have great difficulty in getting over some weirs, and they would require fish passes. The owners of the Erne Fishery constructed a fish pass at Littlemount weir, which has proved very efficient.
6	Letterkenny (Buncrana Rivers). .	Fifty years. Not much change, but, if anything, a little later.	The Castle, &c. Over ten miles. Two have little or no supervision	The bailiffs are engaged all the year round.	No.	—
7	Londonderry (Foyle and Tributaries).	Thirty-three years. No change in time of spawning.	Foyle and Tributaries. Three hundred and fifty miles. All protected.	About three hundred water bailiffs; 250 for the spawning and fifty for the whole year.	No.	Sixty-seven weirs: some of these are very difficult to cross and should have fish passes.
8	Coleraine (Bann and Tributaries). .	Thirty-four years. No change in time of spawning.	Bann and Tributaries. About 300 miles. About 80 miles (comprising the upper portions) of some of these rivers have no supervision.	During the time salmon are ascending bailiffs are employed watching at mill weirs and mills, where salmon get impounded for want of passes; during the spawning season they watch the redds, and during the descent of salmon and fry their whole time is required to prevent their total destruction by water motors and poisonous liquids discharged from bleachworks, &c.	Salmon cannot live in the Upper Bann and Sixmilewater, owing to poisonous matter discharged from factories, and in a short time the enormous quantity of dye refuse into the Kells river will destroy it also as a breeding river.	Eighty-seven weirs. Salmon have great difficulty in getting over some of these, and at a few they are stopped altogether.

B.—Salmon Fisheries, Ireland.—Answers by Local Inspectors of Fisheries—*continued.*

—	Fishery Districts.	6. State the number of mills on each river where situated; whether driven by turbines or ordinary wheels, and state on which are guards or gratings, also kind of guards, number, and where placed?	7. When mills are working are the rivers left dry, and do any fish perish for want of water?	8. Is there much poisonous matter in your rivers from bleach works or other works? If so, say where, and can you suggest means to prevent such?	9. Has any case come under your notice where fish have been killed or injured by flax water or other poisonous matter discharged into rivers?	10. What is the general form of poaching, and is it on the increase or decrease?	11. How many prosecutions have you had each year, and in how many have you obtained convictions?
1	Lismore (Blackwater River), .	On main river one bucket wheel and one turbine, the latter well guarded on scientific principles	River is practically dry when mills are working from weir to outflow.	No.	No.	Every form of poaching is practised. I do not think it is on the increase.	—
2	Limerick (Shannon River), .	Seven mills on the Inny, one mill and three weirs on the Suck; at Ballinasloe, one mill and three weirs; at Frankford on the Silver river, three mill dams, Ruskey, three mill dams, Mellick on the Brosna, four mills; and Killimore river, three weirs and one mill dam. All driven by bucket wheels but one, which has a turbine, but it is well protected by a fry guard	Yes but not in great quantities	Some fish have been killed at Tullamore, Kilbeggar, and Banagher by outflows from distilleries, and there is bad sewage at Athlone woollen factory. Burnbrook mills and Lick mills, from which dye stuff is allowed to flow occasionally.	No.	Poaching is by nets spears, gaffs, and cross lines.	Have had 103 cases during the last three years, got eighty-three convictions, twenty dismissed or withdrawn.
3	Ballina (Moy River), ...	About fifteen mills remain, many have been disused, two are worked by turbines, and a third turbine is being erected. all have guards and gratings.	—	No.	No.	Gaffs and nets, the latter on the increase. Poaching has increased and I mills more frequently mobbed and assaulted.	—
4	Sligo (Sligo River), ...	Four mills, one of which is driven by a turbine, which has a guard on head race.	Not that I have seen.	No	No.	Gaffs.	Very few lately.
5	Ballyshannon (Erne River), .	Forty-three mills, two driven by turbines	In dry weather rivers are dry and some fish perish.	No.	Yes, in great quantities.	Nets and gaffs.	—
6	Letterkenny (Bunerana Rivers),	None working.	No mills working.	No.	No.	Gaffs and nets.	—
7	Londonderry (Foyle and Tributaries)	Eighty mills, four driven by turbines, all the others bucket wheels Three turbines on River Roe well guarded during the descent of salmon and fry to the sea.	During dry weather in some cases the mills take all the water, and many ova and fry perish	There are bleach works on the Faughan river, poison from which used to kill a great many fish but more care has been taken of late to prevent this.	Hundreds of salmon and thousands of fry are killed every dry season by flax water. In 1898 254 salmon fry were killed by discharge from one flax dam in a small river near Sion Mills.	Nets and gaffs. The increase or decrease depends on the supply of salmon.	This varies from fifty to 100 in a year. Convictions are nearly always obtained, but the fines are ridiculously small—often 6d. and sometimes 1d.
8	Coleraine (Bann and Tributaries),	One hundred and twenty-one mills, driven by eighty-one turbines and 121 bucket wheels. Only twenty-three turbines have fry guards, and salmon fry must be killed in large quantities by the remainder, but as the turbines are generally covered over it is impossible to tell the quantity killed	The river in most cases from weir to tail race is almost dry when mills are working, and very often salmon and fry perish for want of water. On the River Maine from Dromona to Lisnadillen, a distance of about seven miles, there are eight mills, and practically all the river water for this distance is diverted from the river, and descending fry have to run the gauntlet of six turbines, only two of which have up sufficient fry guards. This condition of things also applies to the Roils river.	All the rivers in this district suffer from poisonous matter from factories and many are destroyed altogether. This could be prevented by the construction of receiving and filtering ponds for the poisonous liquid.	In dry seasons thousands of fry (salmon and trout) and eels are killed in these rivers by flax water.	Gaffs and nets	This varies from thirty to 100.

D

B.—Salmon Fisheries, Ireland.—Answers by Local Inspectors of Fisheries—*continued.*

—	Fishery District.	12. Are there any rivers which were formerly frequented by salmon and are not now? If so, name them and give reason.	13. Have the number of breeding fish lessened during your memory? And if so, can you suggest cause for diminution?	14. Are any spawn beds left dry from rise and fall of rivers and does spawn perish from this cause?	15. Are there any eel fisheries in your rivers?	16. Are salmon fry killed in the eel nets?	17. Is there any destruction by cormorants, mergansers, ducks, water ousels, or other birds that prey on ova or young of salmon? and have these increased of late?
1	Lismore (Blackwater River),	No.	Number of breeding fish has lessened in about the same proportion as the number captured, but there is no reason to suppose that the falling-off is permanent.	Many spawn beds are left dry, and large quantities of ova must perish.	No.	—	Considerable destruction occurs to salmon fry by cormorants and herons.
2	Limerick (Shannon River),	The Camlin, which was formerly well stocked, now has none, owing, it is believed, to the erection of gates in the weir wall; and the Carradore, the falling off in which is said to be caused by the flood gates constructed at Ruskey, on the Shannon.	Yes, attributable to poaching.	No, except in the Silver river at Frankford, where they suffer in dry frosty weather by their beds becoming partly exposed.	Yes.	Yes	Yes. Greatly increased destruction, principally by cormorants, cranes, and mergansers.
3	Ballina (Moy River).	No	No, taking one year with another.	Spawn perish from this cause	Yes.	have heard salmon fry are killed in eel nets.	Yes, to a great extent
4	Sligo (Sligo River),	No.	Of late years there was a decrease, until last year, when there was a full supply.	Very few.	No	No	None that I know of
5	Ballyshannon (Erne River),	No.	No.	Some spawn beds are left dry, and the ova perish from this cause.	Yes	No. Eel fishing does not commence till 1st July, when salmon fry have nearly all left the river.	Yes, by cormorants and mergansers. The former have increased.
6	Letterkenny (Bunerana Rivers),	I do not know of any.	Breeding fish have not lessened.	Some are left dry, and ova perish.	No	No.	There is destruction by farmyard ducks.
7	Londonderry (Foyle and Tributaries).	No.	Breeding fish have increased.	Occasionally this happens	No.	No.	Cormorants have increased, but I cannot say that they do much damage.
8	Coleraine (Bann and Tributaries).	Yes. The Sixmilewater and Upper Bann. Caused by poison from factories.	The number of breeding fish has very much decreased, and this is owing to their destruction by turbines, poison from factories, and poaching.	Yes. Below mill weirs much dead ova has been found in the Kells river, covered with a black gluey stuff which flowed from dye works.	Yes	This is the only district in Ireland where eels can be fished in the month of June, and during this month great quantities of salmon fry are killed in the nets. There are fifty nets	It is believed cormorants and ducks destroy some fry. Cormorants have increased.

—	Fishery District.	18. Is the Weekly Close Time observed in your district?	19. In your opinion is a very large number of salmon in a breeding stream advantageous or otherwise? Do the late fish root up the earlier made spawn beds? and to any great extent?	20. Has the drainage of the country so improved of late years that you have high floods for a short period and then long times of low water? If so, has this the tendency to induce salmon to spawn on banks which are left dry and often frozen, or the ova carried away by first flood and lost? Could you suggest any means to overcome this cause of injury?	21. Have you seen any disease among your fish or fry, or have they been preyed on or injured by water scorpions, leeches, or predatory or rapacious fishes?	22. Have you any suggestions to make as to better protection of salmon, or any remarks that you believe would tend to the prosperity of the Fisheries?
1	Lismore (Blackwater River),	It is, except by poachers.	Yes, if well protected. Rooting up does not occur to any great extent.	The drainage has caused the rivers to rise and fall more rapidly. I cannot suggest any remedy.	No.	Better protection.
2	Limerick (Shannon River),	Fairly well, except on Lough Ree.	A limited number in small streams well looked after is preferable. Rooting up happens sometimes in shallow streams.	Floods rise more quickly, and recede faster owing to drainage, and sometimes spawn beds are injured.	No disease, but fish are injured by scorpions, pike, perch, and large trout.	Raise the licence duty to obtain funds, improve the fish passes, curtail the eel net fishing season, and construct salmon hatcheries, increase the staff of water bailiffs, give better pay.
3	Ballina (Moy River),	Yes.	A very large number is not advantageous. I have frequently observed three runs of fish spawn on the same beds.	No.	No, but they are preyed on by seals and otters.	Greater assistance from the Constabulary and Coastguards.
4	Sligo (Sligo River),	Yes.	Too many fish are injurious, as they often root up the earlier laid spawn.	—	No.	No.
5	Ballyshannon (Erne River),	Yes.	It is not advantageous to have an overstock, as the later sometimes do root up the beds of the earlier.	The drainage has caused the rivers to discharge the floods more rapidly, consequently there are longer periods of low water, and ova is sometimes lost.	No disease, but pike and other fish prey on them.	Assistance from Constabulary and Coastguards in protecting, and deterrent minimum penalties.
6	Letterkenny (Bunerana Rivers),	Always, unless by poachers and drift net fishers.	Too many would certainly do harm, and would root up each other's beds.	The drainage has done a good deal of harm, as the floods rise quicker and higher than formerly. A flood which would have lasted ten days now runs off in three.	Three diseased salmon were seen in 1898 in the sea. None ever appeared above the tidal flow.	The Constabulary, who have plenty of time, should protect the Fisheries as they do other properties. Trawlers and drift net fishers should be kept a reasonable distance from the mouths of all rivers.
7	Londonderry (Foyle and Tributaries),	Yes, except by drift net fishermen; and to prevent these from fishing it requires two steam launches and four well-equipped rowing boats to be kept constantly patrolling.	A large number is advantageous, but there could be too many. They do, but this mostly takes place when crowded below mill weirs.	Floods rise more rapidly and subside faster, and ova deposited on high banks is sometimes lost. If possible, surplus water during floods should be impounded high on the rivers, which could be let down gradually during dry spring months.	No.	The Constabulary should assist the bailiffs during annual close time, and in the estuaries and sea the Coastguards should see that the weekly close time is observed, and prevent unlicensed nets being fished, and there should be sufficient minimum penalties for all offences.
8	Coleraine (Bann and Tributaries),	Yes, except on the sea coast, by salmon drift net fishermen, and in Lough Neagh by pollen fishermen.	A large quantity of salmon in a breeding stream is very advantageous if properly preserved. This has not happened for many years in this district, except below mill weirs.	The drainage in this district has not affected the rise and fall of the rivers very much, and there is not much loss of ova by the cause suggested by the question.	No, but salmon fry are preyed on by pike, and often button by leeches, which leave an ugly wound, but it is not known if any die from this cause.	Spawning beds should be multiplied and improved in the lower parts of the breeding rivers, as these are now the only parts where salmon can safely spawn, and their fry be preserved.

(3.)—ANSWERS TO QUERIES REGARDING SALMON FISHERIES FROM THE FOLLOWING AUTHORITIES:—

(See the Evidence of Mr. Moore, qq. 451–457 and q. 6302).

S. JAFFÉ, Osnabruck, Germany.
Professor METZGER, Germany.
Dr. HOEK, Counsellor to the Government of the Netherlands.
Finland, per British Embassy, St. Petersburg,
Fish Commissioners, State of California.
GEORGE M. BOWERS, Commissioner, United States, North America.
Marine and Fisheries Department, Victoria, British Columbia
F. GOURDEAU, Deputy Minister, Marine and Fisheries, Ottawa, Dominion of Canada.
ALEXANDER LUMSDEN, Superintendent, Tay Fisheries.
Chairman of the Severn Fishery Board.
Camel Fishery District.
J. DICKSON, Clerk, Tay District, Salmon Fisheries Board.
E. T. OWEN, Clerk, Wye Fishery Board.
JOS. JOHNSTON & SONS letter on fishery matters generally.

GERMANY.

Mr. S JAFFÉ and Professor METZGER.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

Salmon catch with drift or draft nets forbidden:

(*a*) in the tidal fishery at the mouth (up to Vegesack), from 15th August to 15th October;
(*b*) from Vegesack up to first weir at Hameln from 15th September to 15th December;
(*c*) above Hameln, from 1st October to 31st December.

II. Is there any weekly close season, and for what period?

Yes; weekly, from Saturday night, 6 o'clock, till Sunday night, 6 o'clock.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

Winter protection (close) time (15th October to 14th December), but with the written permission of the head Government official of the district, gravid salmon may be taken on condition that the ova are delivered up for artificial propagation. Bailiffs are employed by Government, but they have not enough time for the work, and do little good consequently.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size or its capability of capture?

The payments of the bailiffs is made out of Government funds, a *small* allowance being added to their pay (forestry officials, river inspectors for navigation purposes) for these fishery duties. In *one* case, where a licence has lately been accorded an amount (3d. per fish taken) is charged towards these funds. This is a trial.

V. Could you give approximate take of salmon for the last twenty-four years?

V. Salmon catch on Hameln (1st weir), extracted by Professor D. Metzger.

Year.	Number.	Year.	Number.
1862,	2,600	1881,	5,412
1863,	4,000	1882,	3,701
1864,	5,000	1883,	2,218
1865,	2,888	1884,	1,630
1866,	1,100	1885,	2,110
1867,	900	1886,	3,012
1868,	1,500	1887,	1,908
1869,	1,800	1888,	1,513
1870,	2,000	1889,	1,560
1871,	600	1890,	1,777
1872,	2,200	1891,	2,686
1873,	1,600	1892,	2,285
1874,	7,500	1893,	2,300
1875,	7,114	1894,	2,765
1876,	2,300	1895,	1,909
1877,	1,870	1896,	2,329
1878,	926	1897,	871
1879,	487	1898,	1,095
1880,	1,250		

VI. Are salmon fisheries declining; if, so, how long?

VI. Salmon catch between Hameln and Elsefleth (statistics only commenced in 1894).

Year.	Number.
1894,	10,004
1895,	6,501
1896,	5,058
1897,	3,382
1898,	3,858

The salmon has declined since 1895 in consequence (no doubt) of the "Fulda" (affluent of the Weser), being canalised between Cassel and Minden, and of 6 poleweirs with insufficient fish passes, which salmon do *not* take, and also because net fishing is overdone, 6 draft nets working the stretch between Minden and Elsfleth, partly *night* and *day*.

VII. If declining, do you consider it a bad cycle of yeare (having experienced such before), or is there an absolute deterioration of salmon fisheries?

Both.

VIII. If so, to what cause do you attribute it?

Mostly the cutting off of the natural spawning beds through the new weirs, *and* over fishing

IX. Have you many Hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

Five main hatcheries. We have this year built a new county hatchery to take the whole of the eggs obtained on the Weser (Hameln weir), capability four million This hatchery will forward the ova fully eyed to the five distributing hatcheries (private hatcheries) free of cost, — the private hatcheries, which are mainly situated near the old spawning beds (smaller tributaries) receiving 2 marks per hundred fry planted. Supervision of this planting is done from the county hatchery by paid official

State Government and county find the funds to build (about £600) and run (about £350 a year for ten years) the new hatchery; a small sum is contributed by the old licenses of Hameln (about £30 on a £800 rent of fishing); another little sum by the licensees of the draft nets at and from Bremen (about £15).

X. Do you turn the fry into river *before* the absorption of the "Umbilical Sac" or *after* the absorption, and how do you keep them to the latter period? are they fed and on what?

Most certainly; and according to Professor Metzger the present catch on the Weser is nearly exclusively due to artificial propagation. Natural spawning being next to impossible.

XI. Do you consider artificial breeding has been beneficial?

We do plant ova from one river in another, and we think they return to the river we plant in.

XII. Have you crossed different varieties of salmon and with what result, and do salmon return to the same river?

No

XIII. Have you observed any change in the timee Salmon enter your rivers?

We think some descend as yearlings, some as two-year-olds, and that the stay, before returning as grilse, is perhaps one to two years. No definite answer possible, as observations are few.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

Not over here; depends upon local circumstances, and size and extent of spawning beds.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

Drift nets only below Bremen. No length fixed. Estuary fishing is free on the Weser.

XVIII Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

Turbines must be fenced; doubtful whether the screens are firm enough to prevent the young fish entering the machines.

XIX Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

We have such laws, but they do *not* protect the fishery sufficiently.

Rittergut Sandfort Osnabruck
28th October, 1899.

DEAR MR. POWER,—

Metzger's reply is to hand to-day only, and I hope that with what I translated and added, and with the small map of the Weser sent to you some time ago, it will be useful.

I may add this:—

We are threatened with the canalization of the whole of the Weser up to Bremen nearly at the mouth of the sea) and looking at the plans for this canalization, which provides a weir (impossible to take for salmon) at Bremen, I have no doubt that in time (ten years) all the catch will be *below*

Bremen, and what propagation there will be *must* then be artificial.

We are *not* deterred by this, and the Government and county grants, on which the new main hatchery near Hameln (see your enquiry sheet) has been built, and will be worked on for the next ten years, have been given after *full* knowledge has been taken of this canalisation business, and after very mature consideration by the authorities granting the money.

As you may know, the Prussian State by no means wastes funds, and you may take it therefore that they think artificial propagation needful.

My private opinion is:

Where you have good spawning beds and free access to them, protect the spawners and spend your money on an *efficient* water bailiff service, providing besides *artificial* hatching (ova from other sources) in times of deficient spawning.

Where you have good upper reaches, but none or few spawners coming up, plant *fry* largely, but let them be hatched in the water that has to feed them.

Where you have longer streams with comparatively small fry feeding ground at top, plant fry at top *and* yearlings in the lower reaches.

I do *not* believe in planting two-year-old salmon; both two-year-olds planted as such and yearlings that descend as two-year-olds have to pass the zone of pollution (if there should be such in the middle course), and I believe that yearlings fed in the top and upper waters, and coming down with the storm water, *can* pass such habitual pollution, and are of course *much* cheaper to plant than two-year-olds

Yours sincerely,

S. Jaffé.

NETHERLANDS.

Answers regarding the Netherlands only.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. Same regulations for the tidal and fresh water parts of the Dutch salmon rivers. The principal engines for taking salmon are: Seines (drag nets), drift nets (floating nets), weirs (weare), bow nets (*fuiken* Dutch), and square nets in Limburg. Each seine used in a salmon river, and longer than 100 M., is considered a salmon seine. Each drift net, the meshes of which are more than 12 centim., is considered a salmon drift net (two sides of the mesh taken together). Each bow net, the largest hoop of which is over 1 25 M. in diameter, is considered a salmon bow net Each square net that has vertical screens at its margins is considered a salmon square net. No other limitations prescribed.

II. Is there any weekly close season, and for what period?

II. Yes. For the seines, the drift nets and the bow nets a weekly close-time has been fixed from Saturday night, 6 o'clock, till Sunday night, 6 o'clock, *for the whole year*. (For the salmon seine a yearly close-time exists from 16th August to 15th of October).

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. No spawning of salmon takes place in this country.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if license is according to size or its capability of capture?

IV. See Answer No. 3.

V. Could you give approximate take of salmon for the last twenty-four years?

V. We dispose of reliable statistics, as far as the salmon are concerned caught in this country, and sent to the market of Kralingsche Veer. We give reliable statistics for *all* the salmon caught in the Netherlands for the last year only. In 1898 the fish brought to market at Kralingsche Veer represented about 75 per cent. of the whole catch. This may have been the proportion in other years also.

Market.—Kralingsche Veer.		Market.—Kralingsche Veer.	
1872,	32,228	1886,	84,230
1873,	58,384	1887,	84,509
1874,	77,070	1888,	68,048
1875,	56,436	1889,	56,144
1876,	42,293	1890,	32 555
1877,	44,580	1891,	46,091
1878,	49,691	1892,	65,481
1879,	38,914	1893,	75,175
1880,	41,736	1894,	57,458
1881,	44,376	1895,	48,486
1882,	55,079	1896,	49,470
1883,	78,609	1897,	39,850
1884,	92,116	1898,	41,633
1885,	104,442	1899,	26,000

VI. Are salmon fisheries declining; if, so, how long?

VI. The group of years, 1882—1887, was uncommonly good for the Dutch salmon fisheries; 1890—1891 were rather bad, and so is the group of years to which belongs 1899: it is the worst we know of. Will future years give better results? That is the question!!

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VII. I feel most inclined to speak of a bad cycle of years, especially so, as the salmon fisheries of other countries: England and Scotland (Ireland also?) at present seem to be as dull as those of the Netherlands. So I don't believe in an absolute deterioration of our salmon fisheries for the present.

VIII. If so, to what cause do you attribute it?

VIII. Suppose it proves impossible, after a couple of years, to deny a general decline of the salmon production of the Rhine—which I don't admit for the present—I'll feel inclined to ascribe it chiefly to the great changes in the Rhine, in consequence of "normalisation" for the benefit of navigation.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. No hatcheries for salmon eggs exist in the Netherlands.

X. Do you turn the fry into river *before* the absorption of the "Umbilical Sac" or *after* the absorption, and how do you keep them to the latter period? are they fed, and on what?

X. The Netherlands Government contracts yearly, since 1889, with several fish hatcheries in Germany (at Frier, on the Moselle, at Saarburg, on the Saar, at Heidelberg, on the Neckar, at Offenburg, and at Freiburg, in the Black Forest) for the purveyance of fry of the salmon. In this year over two millions of fry have been delivered and have been set free at or near the spawning places of the salmon. They were turned into the river shortly before the absorption of the "Umbilical sac."

XI. Do you consider artificial breeding has been beneficial?

XI. I do! The salmon fisheries of the Rhine would, probably, be in a much poorer condition still if no artificial breeding had been practised.

XII. Have you crossed different varieties of salmon and with what result, and do salmon return to the same river?

XII. I never did! Only one species of salmon ascends the Rhine (Salmo salar); the species that comes nearest to it is the sea trout (Salmo trutta). Yet so far as my knowledge goes no crossing of these two species has ever been successful. In Switzerland immense quantities of eggs of the brook trout (Salmo fario) have been fecundated with the milt of the salmon (Salmo salar). Though the fry developed well enough and was set free in the ordinary way, no good came out of it. I admit that the Rhine salmon returns to the Rhine, and I think that by making use of the statistical method, as practised by Heincke for the herring, it would be possible to show that a Rhine salmon is different from say a Baltic salmon or a Loire salmon.

XIII. Have you observed any change in the times Salmon enter your rivers?

XIII. There are early and late salmon years—not much attention has been paid to this detail in this country.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. The fry born say in May in a certain year descends the river next year in spring-time and passes through Holland on its way to the sea in the month of May. Part of the young salmon (parr) however remain in the tributaries when the others descend. Most of them are males, and they will play an active part in the spawning of next autumn. The parr (called smolts as soon as they have lost their beautiful colours) going to sea one year old remain there at least two years, and return to the mouth of the river in July and August as grilse (Salmon St. Jacques); or they remain in the sea one year longer and return May and September as small summer salmon; or they remain in the sea one year longer still and return throughout the whole year as large summer salmon or winter salmon.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. I often found a herring and large remains of a gar-pike in the stomach of a salmon. Once a skeleton of a smelt, once a skull of a small specimen of a haddock, etc. They were salmon caught in March and April in the tidal part of the Rhine. Most salmon did not take food for a long time before entering the Rhine.

XVI. Do you consider there can be many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, or how?

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers.

XVI. As far as my experience goes the more breeding fish in the upper part of a stream the better.

XVII. Are drift nets what the French call "tramails" and we "dryfnetten" or "vlouwen"? I suppose so. *They are used* Their length is not limited, but their height is. 2 5 M. Practically their length also is limited, as they are always made use of with the aid of a small rowing boat with a crew of two men only.

XVIII. There are no turbines on the salmon rivers in this country.

XIX. They do not! Happily large towns with considerable manufactures are not numerous in the neighbourhood of our salmon rivers. Rotterdam river pollution is perhaps not quite harmless. . .

J. P. C. Hoek,

Scientific Counsellor of the Netherlands Government in Fishery matters.

FINLAND.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

II. Is there any weekly close season and for what period?

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds, what do you pay your bailiffs, and for what length of time?

IV. How are these funds obtained? If from licences, please state how nets are licensed, and mounts charged and if licence is according to size of net or its capability of capture?

V. Could you give approximate take of salmon for the last twenty-four years?

VI. Are salmon fisheries declining; if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before) or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

X. Do you turn the fry into river *before* the absorption of the "Umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon, and with what results, and do salmon return to the same river?

XIII. Have you observed any change in the times salmon enter your rivers?

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

I. All there is to say regarding the length of the nets is that they must not extend as far as the "kungsadra" (a third part of the width of the water-course, where it is deepest), which always has to be open, except, when fencing off on account of old usage or court's verdict is not allowed. The size of the meshes in all salmon nets used in rivers is defined. The minimum distance between the knots is usually 62 mm.; in a few cases 37 mm.

II. No.

III. Yes, but the supervision is insufficient. The bailiffs are engaged partly from the 1st June to the freezing of the waters or the 1st December, partly only for certain parts of the year (in the Archipelago during the summer fishing season, June and July, in the rivers during the close-time after the 1st or 15th September, to the freezing of the waters). Wages usually three marks per diem. (2*s.* 4*d.*)

IV. The bailiffs' wages are paid either by the Finnish Government or else by the companies, which have taken the salmon fisheries of the Government on lease.

V. No.

VI. Yes.

VII. Except the periodical changes, probably a general deterioration.

VIII. Floating of timber, insufficient supervision, increase of fishing in the sea, the dirtiness of the water, and the bottom, caused chiefly by pulp-manufactories.

IX. No hatcheries. Some that were established about the year 1860 have ceased working.

XII. In general, the salmon seems to return to the same river where it was born.

XIII. The time of the salmon entering the rivers varies somewhat, depending upon the state of the weather.

XIV. Probably two years.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XV. Small herring.

XVI. Spawning beds are, certainly, rooted up, where there is too little room for the present breeding fish, but when the latter fish is re-spawning, this is no cause to diminish the breeding fish, but certainly to extend the spawning beds.

XVII. Drift nets and seines are used in certain parts of rivers, and in sweeps of seines marked out.

XVIII. In some new water motors it is stipulated that the channels which lead the water to the turbines, should be fenced by grating, 20 mm. between the bars.

XIX. No.

STATE OF CALIFORNIA.

Answers from Fish Commissioners.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

II. Is there any weekly close season, and for what period?

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size of net or its capability of capture?

V. Could you give approximate take of salmon for the last twenty-four years?

VI. Are salmon fisheries declining; if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

X. Do you turn the fry into river *before* the absorption of the "umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon, and with what result, and do salmon return to the same river?

XIII. Have you observed any change in the times salmon enter your rivers?

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

I. See California Fish and Game Laws, sections 628, 629, 634, and 636, on pages 19, 20, 22, and 24. Copy of Laws enclosed. (*For the Sections of Laws referred to, see page* 105.)

II. See California Fish and Game Laws, sections 628, 629, 634, and 636, on pages 19, 20, 22, and 24. Copy of Laws enclosed.

III. See California Fish and Game Laws, sections 628, 629, 634, and 636, on pages 19, 20, 22, and 24. Copy of laws enclosed. Deputies are paid from $60 to $100 per month for regular men. Extra men are employed during the closed season. The Commission owns a launch, 22 horse-power, that constantly passes over the fishing grounds.

IV. See page 10 California Fish and Game Laws. The licences collected under this act yield about $4,250 per annum. Appropriations are also made by the Legislature each session, and average $10,000 per year for enforcing the laws, and $10,000 for the support of the State hatcheries.

V., VI., VII., VIII. We are unable to give you the figures which would answer these questions, as, unfortunately, the statistics have not been regularly compiled. We believe that the salmon are on the increase in our streams, and what figures we have go to prove this.

IX. The State maintains six hatcheries and appropriates $10,000 a year for their support.

X. Salmon fry is liberated as soon as the sac is absorbed. We hold the alevins in the hatcheries and in large ponds built for the purpose.

XI. There is no doubt of it.

XII. We have not crossed different varieties of salmon. Have no occasion to do so. The Quinnat, our native salmon, is superior to any other. We cannot prove that they return to the same river. During the past season, several salmon that had been marked and liberated in the Columbia River in Oregon, three years ago, were captured in the Sacramento river in this state, and averaged in weight twenty pounds. There is no question but that these were the fish that were liberated in the Columbia.

XIII. Certainly. The run varies with changed condition of water and temperature.

XIV. Our theory is that the salmon remain in the sea from three to four years. Our Pacific Coast salmon return to the river but once. They all die after spawning. There is no question of this.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. We have not sufficient information to answer this. Specimens taken in the sea show that they feed on small fish and crustacea.

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVI. No, but we spawn all of the fish that we can capture. Unquestionably too many fish if left in a limited space would injure each other's spawn.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. See answers to Questions 1, 2, and 3.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. No.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. Yes; see section 635, page 23, California Fish and Game Laws.

U. S. COMMISSION OF FISH AND FISHERIES.

WASHINGTON, D.C., *September 19th*, 1899.

Mr R. L. Moore,
Molenan, Londonderry,
Ireland.

DEAR SIR,—

Your letter of the 29th ultimo with enclosed questions, pertaining to the salmon fisheries, has had attention.

Owing to the fact that in the United States the regulation of the fisheries is vested exclusively in the various states and not in the general government, your inquiries, when propounded to this Commission, are not altogether appropriate. They have, however, been answered as fully as practicable.

It is assumed that your letter refers only to the salmon (*Salmo salar*) of the east coast of the United States, and not to the five or six much more important species frequenting the streams of the Pacific coast.

The Penobscot river, in Maine, is the only stream that now has a noteworthy run of salmon, and all answers to your questions apply to that stream.

Some literature issued by the Commission pertaining to both the Atlantic and Pacific salmons is sent herewith for your information.

Very respectfully,

GEO. M. BOWERS,
Commissioner.

UNITED STATES.

ANSWERS from COMMISSIONER of FISH and FISHERIES.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. Practically all the salmon are taken in brush weirs and traps (see descriptions and illustrations in report sent herewith).

II. Is there any weekly close season and for what period?

II. No. Between April 1st and July 15th, there is a general weekly close time for seines, nets, weirs, and traps, from sunrise Saturday to sunrise Monday, but this does not apply to the Penobscot.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. Salmon enter the river in April and are caught until July 15th. From that date until April 1st following there is a close time on all net fishing, but the use of angling lines from July 15th to September 15th is permitted.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size of net or its capability of capture?

IV. The fish laws of Maine are enforced by fish commissioners (three in number), who serve without salary, and fish wardens appointed by the governor for a term of three years. Funds are appropriated by the State legislature, and additional funds result from fines. Wardens are allowed the same fees that sheriffs receive for like services. The fish laws are very efficiently enforced in this state. There is no licensing of nets.

V. Could you give approximate take of salmon for the last twenty-four years?

V. No. The only years for which trustworthy data are available are the following, the figures being collected by this Commission:—

Years.	Number of Fish.	Equivalent Pounds.
1873	13,690	150,590*
1880	10,016	110,176
1887	14,150*	169,894
1888	16,020*	192,177
1889	11,750*	140,469
1892	7,690*	92,282
1895	4,395	65,011
1896	6,403	80,175
1897	3,959	48,054
1898	3,225	42,562
1899	3,541	46,026

*Approximate

VI. Are salmon fisheries declining; if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

VI., VII., and VIII. There is a general downward tendency, due to obstructions, curtailment of spawning grounds, over-fishing, etc. The maximum yield of the Penobscot salmon fishery was about 15,000 fish in the early seventies.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. There is only one hatchery in the Penobscot basin; this is a Government hatchery located at Craig Brook, near East Orland, maintained by congressional appropriations. An account of the methods there pursued will be found in one of the pamphlets herewith transmitted.

X. Do you turn the fry into river *before* the absorption of the "Umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

X. At the foregoing station we handle annually between two and three million salmon. Of these about 1,500,000 are liberated as fry, after the absorption of the sac, in tributaries of the Penobscot river. During the past few years we have reared from 250,000 to 600,000 to what we call the fingerling or yearling stage. They are distributed between the first of August and the first of December, and are fed on beef, liver, horse flesh, and like material. Up to two years ago artificially bred fly larvae were used as food, but this had to be discontinued. It is believed that the live food produced better results and healthier fish than the liver, etc.

XI. Do you consider artificial breeding has been beneficial?

XI. Undoubtedly.

XII. Have you crossed different varieties of salmon, and with what results, and do salmon return to the same river?

XII. No crossing has been attempted. Fish from the Penobscot return thereto, perhaps for the reason that it is the only available stream. In earlier years, when the condition of the other streams was more favourable, Penobscot fish entered other rivers on the New England coast, and *vice versa*, as determined by tagging experiments and otherwise.

XIII. Have you observed any change in the times salmon enter your rivers?

XIII. No.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. See reports sent herewith.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. Observations on habits of salmon at sea are very incomplete and unsatisfactory.

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVI. It is thought that it would be impossible under natural conditions to have too many breeding fish in any stream in which fishing is carried on. The injury from the cause mentioned is very remote here.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. See answer to Question I and report sent herewith.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. No information on the subject as regards Penobscot.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. No. The pollution of our rivers by sewage, factory, and mill refuse, is now a very serious menace to the fish supply.

AT THE GOVERNMENT HOUSE AT OTTAWA.

SATURDAY, the 3rd day of March, 1894.

Present —His Excellency the Governor-General in Council.

His Excellency, having in view the more efficient protection of fish in the Province of British Columbia, is pleased, under the provisions of the "Fisheries Act," chapter 95 of the Revised Statutes of Canada, and by and with the advice of the Queen's Privy Council for Canada, to order that the Fishery Regulations for the Province of British Columbia, established by Order in Council of the 18th July, 1889, chapter 75 of the consolidated Orders in Council, and also by Order in Council of the 14th day of March, 1890, shall be and the same are hereby rescinded, and the following substituted in lieu therefor:—

FISHERY REGULATIONS FOR THE PROVINCE OF BRITISH COLUMBIA.

1. Fishing by means of nets or any other fishing apparatus whatever for any kind of fish without licenses from the Minister of Marine and Fisheries is prohibited in any of the waters of the Province of British Columbia.

(*a*) Provided always that Indians may, at any time, with the permission of the Inspector of Fisheries, catch fish for the purpose of providing food for themselves and their families, but for no other purpose, but no Indian shall spear, trap or pen fish on their spawning grounds, nor catch them during the close season, or in any place leased or set apart for the natural or artificial propagation of fish, or in any other place otherwise specially reserved.

2. Nets for catching "Quinnat" or spring salmon in the tidal waters of British Columbia shall only be used from the 1st day of March to the 15th day of September, both days inclusive, and the meshes of such nets shall not be less than $7\frac{3}{4}$ inches in extension measurement, and nothing shall be done to practically diminish the size of meshes.

3. The meshes of nets for catching salmon, other than quinnat or spring salmon in the tidal waters shall not be less than $5\frac{3}{4}$ inches in extension measurement, and shall only be used between the 1st day of July and the 25th day of August, both days inclusive, and between the 25th day of September and the 31st day of October, both days inclusive, in any year, and nothing shall be done to practically diminish the size of the meshes.

4. No salmon shall be taken in any of the waters of British Columbia, from the 15th day of September to the 25th day of September, both days inclusive, nor from the 31st day of October to the last day of February following, both days inclusive.

5. No nets other than drift nets shall be used for catching salmon of any kind, and such drift nets shall only be used in tidal waters.

6. No nets of any kind shall be used for catching any kind of salmon in the inland lakes or in the fresh or non-tidal waters of rivers or streams. But Indians may, with the permission of the Inspector of Fisheries, use dip nets for the purpose of providing food for themselves and their families, but for no other purposes.

7. Drift nets shall not be used so as to obstruct more than one-third of the width of any river or stream of any branch or channel thereof, and nets shall be kept at least 250 yards apart.

8. No seines shall be used within the distance of five hundred yards from any point in any direction whatever from an imaginary line drawn across the mouth of any river or stream in British Columbia, and the points between which the said line shall be drawn shall be fixed by the Inspector of Fisheries.

9. No one shall fish for salmon from Saturday morning at six o'clock until the following Sunday afternoon at six o'clock. All other nets or other fishing gear set or used and all fish caught during this period shall be deemed to be illegally used or caught, and shall be liable to seizure and confiscation, and the person or persons so violating the law shall also be liable to the fines and penalties provided by the Fisheries Act.

10. Before any net or fishing boat or other fishing apparatus is used, the owner or person interested in such net, fishing boat or fishing apparatus shall cause a memorandum in writing, setting forth the name of the owner or person interested, the length of the net or boat, and the description and size of any fishing apparatus it is the intention to use and the place where it is proposed to use the same, to be filed with the Inspector of Fisheries, and if no valid objection exists, the Inspector of Fisheries may, subject to such instructions as he may receive from time to time from the Minister of Marine and Fisheries, issue a fishery license for the same. Any net, fishing boat or fishing apparatus, used before such license has been obtained and any net, fishing boat or fishing apparatus used and not included in the description contained in such license shall be deemed to be illegal and liable to forfeiture, together with the fish caught therein; the owner or person using the same shall also be subject to the fines and penalties provided by the Fisheries Act.

11. All nets and fishing boats shall be numbered, and every boat shall have its number and the name of its owner painted on it in a conspicuous manner, and every net shall have the name of its owner or owners as well as the numbers legibly marked on buoys of wood or metal painted white, and floating on the water attached to each end of the net, and such names and numbers shall be permanently kept on such nets and boats during the fishing season and shall be so placed and kept as to be visible without taking up the net or nets, and any net or fishing boat used without such marks shall be liable to forfeiture.

12. Each *bona fide* fisherman, being an actual resident of the Province of British Columbia, shall be entitled to obtain one license to fish for salmon.

13. Each firm, company or person actually engaged in the business of freezing and exporting fresh salmon shall be entitled to obtain not more than *seven* licenses.

14. Each firm, company or person actually engaged in the business of shipping or exporting fresh salmon on ice not frozen or canned, shall be entitled to obtain not more than *seven* licenses.

15. Each firm, company or person actually engaged in dealing in salmon for home consumption, shall be entitled to obtain not more than *seven* licenses.

16. Each company, firm or person carrying on the business of salting, curing or smoking salmon for the domestic or foreign markets shall be entitled to obtain not more than *seven* licenses.

17. Each firm, company or person actually engaged in canning salmon for the domestic or foreign markets, shall be entitled to obtain not more than *twenty* licenses.

18. The holder of every license shall at the end of each fishing season make a true return of all fish caught under such license.

19. No license shall be granted to any company firm or person unless each member of such firm or company or such person is a British subject, and such firm or company or person must be the actual owners or proprietors of the business, nets, boats and fishing gear for which the licenses are granted, and all salmon caught for the purpose of being frozen, canned, salted, cured or smoked shall be so frozen, canned, salted, cured or smoked in the Province of British Columbia.

20. No license shall be transferable under any circumstances unless the written consent of the Minister of Marine and Fisheries has first been obtained.

21. All licenses granted under sections 12, 13, 14, 15, 16 and 17, shall be called a "Commercial" license, and no net to be used under any such "Commercial" license shall exceed in length *three hundred yards*, and the fee for such "Commercial" license shall be ten dollars ($10.00).

22. Every settler or farmer actually residing on his lands or with his family being a British subject, shall be entitled to obtain one license, by applying therefor to the Inspector of Fisheries, and under such license may fish in any of the waters of British Columbia, except in any prescribed limits at the mouths of rivers or streams or during the close season, or in any place leased or set apart for the natural or artificial propagation of fish or in any other place otherwise specially reserved. Such license shall be called a "Domestic" license. No net to be used under any "Domestic" license shall exceed *three hundred yards* in length. The meshes shall be of the same size as those under "Commercial" licenses, and such nets shall only be used for obtaining fish for the use of the owners' families and not for sale, trade or barter. The fee for a "Domestic" license shall be one dollar ($1.00).

23. No person shall fish for, kill, buy, sell or have in possession in the Province of British Columbia any young of the salmon, such as fry, parr, smolt or grilse under three pounds in weight, and if any such young are caught by accident in nets or other fishing apparatus, they shall be liberated alive at the cost and risk of the owner of such net or apparatus.

24. Holders of licenses for using nets to catch salmon-trout and whitefish in the lakes in the Province of British Columbia, may use gill-nets, such nets not to exceed *one thousand yards* in length, with meshes not less than five inches extension measure. The fee for a license to catch salmon-trout and whitefish shall be five dollars ($5 00).

25. No one shall fish for, catch, buy, sell or possess in the Province of British Columbia any salmon-trout or whitefish from the 1st day of October to the 30th day of November, both days inclusive.

26. No one shall fish for, catch, kill, buy, sell or possess any brook trout of any kind or speckled trout, between the 15th day of October and the 15th day of March, both days inclusive. But Indians may at any time catch such trout for the purpose of providing food for themselves and their families, but for no other purpose.

27. No one shall at any time fish for, catch or kill brook trout of any kind or speckled trout by means other than angling with hook and line, and this restriction shall apply to Indians.

28. The use of firearms of any kind, explosive materials, spears of any description or torch or other lights to kill fish is prohibited in the Province of British Columbia.

29. All materials, implements, nets, appliances or gear of any kind used and all fish caught, taken, killed, bought, sold or possessed in violation of any of the above regulations shall be seized and confiscated, and any person or persons, or company violating any of the above regulations shall also incur the other penalties provided by the Fisheries Act.

30. The above regulations shall come into force on the first day of May, 1894, and thereafter all former regulations relating to the fisheries in the Province of British Columbia, shall be superseded and repealed.

JOHN J. McGEE,
Clerk of the Privy Council.

AT THE GOVERNMENT HOUSE AT OTTAWA.

Wednesday, the 21st day of November, 1894.

Present:—His Excellency the Governor-General in Council.

His Excellency, under the provisions of chapter 95 of the Revised Statutes of Canada, intituled "The Fisheries Act," and by and with the advice of the Queen's Privy Council for Canada, is pleased to order that the following fishery regulations for the Sturgeon fishery in the Province of British Columbia, shall be and the same are hereby adopted.

REGULATIONS FOR THE STURGEON FISHERY IN BRITISH COLUMBIA.

1. No one shall fish for, catch, kill, buy, sell or have in possession, any Sturgeon in the Province of British Columbia, between the 1st day of June and the 15th day of July, both days inclusive in each year, nor shall any Sturgeon be fished for, caught or killed, during the weekly close time from Saturday morning at six o'clock until the following Sunday afternoon at six o'clock.

All nets or other fishing gear used and all fish caught, during the annual close season or the weekly close time, shall be liable to seizure and confiscation, and the person or persons so violating the law, shall be liable to the fines and penalties provided by the Fisheries Act.

2. Sturgeon fishing shall be carried on only by by means of gill-nets, drift-nets and baited hooks, and no person or persons shall carry on Sturgeon fishing except under license obtained from the Minister of Marine and Fisheries.

3. The meshes of all nets for catching Sturgeon shall not be less than twelve inches extension measurement from knot to knot, when in use fishing, and nothing shall be done to practically diminish their size. The length of each set of the said gill or drift nets shall not exceed three hundred (300) yards in the water at one time.

The total number of sets of gill or drift-nets to be used under license by any one person or company, shall not exceed five, and the joining of such nets together to make a continuous net exceeding 300 yards in total length is prohibited. The distance between adjacent nets when set for fishing shall not be less than 250 yards.

4. Not more than six (6) hooks shall be attached to each Sturgeon line. Each of the said hooks shall be individually separated by a distance of not less than five (5) feet. Unbaited hooks are forbidden, and lines with hooks improperly baited with a view to evading this prohibition shall be seized and confiscated in accordance with clause 11 of these Regulations.

5. Sturgeon licenses shall be granted only to *bona fide* resident British subjects and no other person or persons shall be eligible for licenses. The holder of every sturgeon license shall be a *bona fide* resident British subject and the actual owner of the nets and other apparatus and fishing gear to be used under such license and no transfer of such license or of the apparatus, with which the fishing is carried on under such license, shall be made to any other person or persons whomsoever unless written permission to do so shall have been obtained from the Minister of Marine and Fisheries.

6. Each sturgeon net and each sturgeon line shall have affixed to it a wooden or metal float, painted white and of such size as to be plainly visible, upon which shall be indelibly written or stamped the name or names of the licensee or licensees and the number of such net or line.

7. Each and every licensee carrying on sturgeon fishing shall make a return with a declaration, thereto attached, under his, her or their signature, showing the number and aggregate weight of the sturgeon captured during the season for which such license was issued, such return and declaration shall be given to the local fishery officer within whose division the fishing is carried on, on or before the 1st day of December of the year for which such license was issued.

8. Sturgeon under four (4) feet in length shall not be fished for, caught, killed, bought, sold or had in possession by any one, but if captured in nets or by baited hooks or otherwise, such undersized fish shall be liberated alive immediately thereafter, and if not so liberated the person or persons failing to comply with this regulation shall be liable to the fines and penalties provided by the Fisheries Act.

9. Applicants for sturgeon fishing licenses shall describe in their applications the locality in which they desire to fish, the quantity of nets, lines and hooks and other fishing gear which they wish to be included in the licenses and shall at the same time pay the fee or fees necessary to obtain such license or licenses.

10. The fee for the legal fishing season, payable on each sturgeon net of 300 yards whether gill or drift net, under a license shall be five dollars ($5), and for each sturgeon line, a fee of one dollar ($1).

11. All materials, implements, nets, lines or appliances used, and all fish caught, taken, killed, bought, sold or had in possession, in violation of these regulations, shall be seized and confiscated, and the possessors or the owners thereof shall furthermore be liable to the penalties provided by the Fisheries Act, and any licensee wilfully violating these regulations shall forfeit his license and shall not thereafter be eligible to obtain a sturgeon fishery license.

12. These regulations shall come into force forthwith in the Province of British Columbia and shall supersede and revoke all or any other regulations now existing or in suspension, in regard to sturgeon fishing in so far as they may relate to the Province of British Columbia.

JOHN J. McGEE,
Clerk of the Privy Council.

AT THE GOVERNMENT HOUSE AT OTTAWA

Saturday, the 19th day of June, 1897.

Present.—His Excellency the Governor-General in Council.

Whereas it is deemed expedient to alter and change the fishery regulations governing the "steelhead" and "cahoe" fisheries in British Columbia, in view of the commercial importance to which they have recently attained, as the mesh of the nets prescribed in such regulations are deemed too large for such fish;

Therefore, His Excellency, in virtue of the provisions of The Fisheries Act, chapter 95 of the Revised Statutes, and by and with the advice of the Queen's Privy Council for Canada, is pleased to order that section 2 of the General Fishery Regulations for the Province of British Columbia, established by the Governor-General in Council on 3rd March, 1894, which reads as follows:—

> 2 "Nets for catching "Quinnat" or "spring salmon" in the tidal waters of British Columbia, shall only be used from the 1st day of March to the 15th day of September, both days inclusive, and the meshes of such nets shall not be less than 7¾ inches in extension measurement and nothing shall be done to practically diminish the size of meshes," shall be and is hereby rescinded, and that the following regulation shall be and the same is hereby substituted therefor —
>
> 2. "Nets for catching 'Quinnat' or 'spring salmon' in the tidal waters of British Columbia, shall only be used from the 1st day of March to the 15th day of September, both days inclusive, and the meshes of such nets shall not be less than 7 inches in extension measurement, and nothing shall be done to practically diminish the size of meshes."

JOHN J. McGEE,
Clerk of the Privy Council.

AT THE GOVERNMENT HOUSE AT OTTAWA.

Wednesday, the 3rd day of August, 1898.

Present.—His Excellency the Governor-General in Council.

His Excellency, in virtue of the provisions of The Fisheries Act, chapter 95 of the Revised Statutes, and by and with the advice of the Queen's Privy Council for Canda, is pleased to order that the General Fishery Regulations for the Province of British Columbia, established by the Order in Council of the 3rd of March, 1894, shall be and the same are hereby amended by adding thereto the following clauses —

1. Every applicant for a fishery licence shall be (*a*) a British subject, resident in Canada, and a *bona fide* fisherman, and (*b*) on or before the 30th day of April shall personally enter his name and address in the register kept by the Inspector of Fisheries or any authorized fishery officer. Before a license is issued to any applicant, (*c*) the required fee shall be paid by the said applicant, and (*d*) he shall show his receipt for tax payments for the preceding year, or otherwise give proof of the payment of the same.

2. Each *bona fide* fisherman being a British subject, registered for two months at least in British Columbia, before the 1st day of July as required under clause 1, shall be entitled to one fishing license. Each firm, company or person engaged in the canning of salmon shall be entitled to ten fishing licenses; but each of such fishing licenses shall be valid only for one fisherman, either Indian or other British subject whose name is enrolled in terms of the conditions stated in clause 1, such name being inscribed on the license by the inspector or officer granting the same at the time of its issue.

3. A fisherman's license shall not be transferable on pain of forefiture, and a canner's license (ten in number to each canning establishment) shall be cancelled if the cannery for which they were issued ceases to be operated.

4. Each fisherman (whether employed by a cannery or not) shall at all times, when carrying on fishing operations, carry with him his license under which he fishes, and shall exhibit it when required to do so by the inspector of fisheries or other authorized officer.

5. Each boat engaged in netting operations shall have a number painted on the bow in black painted on a white ground, such number being entered upon and corresponding with the license. The letters or figures painted on the boat shall be plainly legible and not less than six inches in height.

6. All nets and fishing boats shall be numbered, and every boat shall have its number and the initial of its owner painted on it in a conspicuous manner, and every net shall have the name of its owner or

owners as well as the numbers legibly marked on buoys of wood or metal painted white, and floating on the water attached to each end of the net, and such names and numbers shall be permanently kept on such nets and boats during the fishing season, and shall be so placed and kept as to be visible without taking up the net or nets. Any net or fishing boat used without such mark shall be liable to forfeiture.

7. No one shall be engaged or employed as a boat puller or boatman on any boat engaged in salmon fishing under license, unless he holds a boat puller's permit. (*a*) Each applicant for a permit must enter his name for the year in the list or register kept by the inspector of fisheries provided in clause 1, and (*b*) any person so registered or entered may receive one permit as such boat puller or boatman on payment of a fee of $1.

8. Any boat found engaged in salmon fishing operations having a boat puller or boatman without such permit shall be liable to confiscation, and to forfeiture of the fishing license under which fishing is being carried on.

9. The conditions set forth in clause 1, distinguished under the letters (*b*) and (*a*), also the conditions set forth in clause 7, under the letters (*a*) and (*b*) shall come into operation on January 1st, 1899.

JOHN J. McGEE,
Clerk of the Privy Council.

BRITISH COLUMBIA.

ANSWERS to QUERIES in regard to SALMON FISHERIES in BRITISH COLUMBIA.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. Yes; no net fishing is legal above tidal water in rivers, from 1st January to 1st July, seven inches; extension measure nets only legal from 1st July to 25th August. Nets not less than 5¾ inch mesh. Extension allowed for Sockeye salmon (O. Nerka), also between 25th September and 30th October.

II. Is there any weekly close season and for what period?

II. Yes, a weekly close time of 36 hours, from 6 a.m. Saturday to 6 p.m. Sunday, every week during the year.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. It is illegal to catch salmon on their spawning grounds, but no special efforts are made to protect them. The tributaries where the salmon spawn are mostly remote from settlements. Indians and prospectors and miners catch salmon for their own use; in this country it would be very difficult to prevent them from doing so. Bailiffs or guardians are only employed. With two or three exceptions, on rivers where commercial fisheries are established, they are employed from four to six months each season, and receive $60.00 per month for the length of time employed.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if license is according to size of net or its capability of capture?

IV. All salmon fishing with nets is illegal without a license. The fee for each net, the length of which is not to exceed 150 fathoms, is $10 for the legal fishing season. The licensee must use only the regulation size mesh; all licenses, at whatever season of the year they were granted, expire on the 30th day of December. The Government derive a revenue of about $40,000.0 from the fisheries of British Columbia. The cost of the service does not exceed $10,000 00. A domestic license is also issued to settlers for their exclusive use only, but not for sale, the fee of which is $1 00.

V. Could you give approximate take of salmon for the last twenty-four years?

V. From 1876 to 1890, both years included, the catch of salmon in British Columbia for commercial purposes was closely approximate to 155,779,428 lbs., and that from 1891 to 1899, 243,303,557 lbs.

VI. Are salmon fisheries declining, if so, how long?

VI. No.

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VII. The catch varies considerably from year to year, but in the Fraser river district, of late years, the fluctuations are less marked than formerly.

VIII. If so, to what cause do you attribute it?

VIII. I attribute the occasional small "runs" in British Columbia rivers to unfavourable conditions existing during the spawning season, principally such as extreme drought or heavy floods.

IX. Have you many Hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. There is but one hatchery in British Columbia at present. The annual output of fry averages about 6,000,000; the cost is paid by the Government of Canada from the revenue received from licenses.

X. Do you turn the fry into river *before* the absorption of the "Umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

X. The fry are turned into tributaries of the rivers immediately before the "umbilical sac" is totally absorbed.

XI. Do you consider artificial breeding has been beneficial?

XI. Decidedly so.

XII. Have you crossed different varieties of salmon, and with what results, and do salmon return to the same river?

XII. We have never experimented in crossing different varieties of salmon. We hold that salmon return to the rivers in which they were hatched or liberated as fry.

XIII. Have you observed any change in the times salmon enter your rivers?

XIII. No material change. The state of the weather, and the quarter from which the prevailing winds blow may influence the movements to some extent.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. It is here necessary to note the fact that in British Columbia waters there are five distinct varieties of salmon, differing in their habits from each other, when young, and also as mature fish. The two most valuable varieties are the "Quinnat" and the "Sockeye" (O. Nerka). The latter are the variety almost exclusively used for canning; they descend the rivers to the sea, when one year old, and, with the exception of a few male grilse, do not return to the rivers until mature time, accepted as four years. The "Quinnat" descend the rivers at a much later period, and are found in the rivers as grilse three years later.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers.

XV. Absolutely nothing is known of the habits or food of the "Sockeyes" from the time they enter the sea until they return to the rivers. The "Quinnat" are more local in their habits, and frequent the coast waters and estuaries of rivers all the year round. Their food consists of small herrings, smelts, and a great variety of small fish, which abound in the coast waters.

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVI. I consider it to be quite possible.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or if not, how far are they kept from mouths of such?

XVII. Drift nets are the only kind used in the rivers or their estuaries; the regulation length is 300 yards. They are allowed to be used in all estuaries; stake or anchored nets, drag nets, or seines are not allowed in any rivers or their estuaries.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. Very few if any water motors are in use on our rivers; steam power being used in all the large mills.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. Up to the present time the laws against poisonous or deleterious matter or debris of any kind, such as sawdust or mill-rubbish being allowed to enter the rivers, have been strictly enforced.

DOMINION OF CANADA.

Answers from the Commissioner of Fisheries.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. Yes, the Fisheries Act, chap 95, section 8, sub-sections 4 and 5. Also the Fisheries Act, chap, 51, section 2 (57 and 58 Vict.) Also British Columbia Regulations, sections 2 and 3.

II. Is there any weekly close season, and for what period?

II. Yes. Chap. 51 (57 and 58 Vict.), section 4. Also British Columbia Regulations, section 9.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. See Chap. 95, section 8, sub-sections 10 and 12; also section 8, sub-section 1. Also British Columbia Regulations, section 4. Three classes of officers: (1) Inspectors of districts, 6,000 to 10,000 square miles each, at salaries of $700 to $1,500 per annum; (2) overseers with smaller areas at $100 to $900, and travelling expenses additional; (3) guardians (one month to three months), at $1·50 per day.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size or its capability of capture?

IV. Parliament votes the necessary appropriations. The Privy Council of England recently decided that the Provincial Governments have the right to issue licences, hence the Dominion Government (with minor exceptions) is giving up the system in vogue for over twenty years of issuing licences, as section 4, chap. 95, is declared *ultra vires*. This Department has no details as to amounts for licence fees charged by the provinces.

V. Could you give approximate take of salmon for the last twenty-four years?

V. Not possible to estimate the catch for last twenty-four years, but in British Columbia alone over 200,000,000 of salmon must have been caught in that time. Our annual reports give only the weight and money value of the commercial catches—not anglers' catches.

VI. Are salmon fisheries declining; if, so, how long?

VI. Must have declined if early settlers' accounts be true, but in recent years has kept up and even improved. In British Columbia the catch has enormously increased.

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VII. Bad cycles held to apply by many fishermen (every three or four years it is said in British Columbia) Some rivers have deteriorated, and fish exterminated, but most Canadian salmon rivers have kept up and even improved

VIII. If so, to what cause do you attribute it?

VIII Destruction in upper waters by Indians and settlers; and deforestation altering the character of the spawning grounds.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. Fourteen batcheries A special Parliamentary appropriation annually to meet the cost. No tax on fishermen.

X Do you turn the fry into river *before* the absorption of the "Umbilical Sac" or *after* the absorption, and how do you keep them to the latter period? are they fed, and on what?

X All fry planted as soon as possible after hatching.

XI. Do you consider artificial breeding has been beneficial?

XI. The opinion prevails that hatcheries have benefitted salmon rivers.

XII. Have you crossed different varieties of salmon and with what result, and do salmon return to the same river?

XII. No crossing experiments tried. Salmon certainly appear, on the whole, to be true to their own rivers. This is proved by the peculiarities (size, shape, etc) characteristic of particular rivers Restigouche salmon on the whole are larger when adult than Miramichi, which is next large river (sixty miles south).

XIII. Have you observed any change in the times Salmon enter your rivers?

XIII Many rivers said to be becoming later, but this remains to be scientifically ascertained.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. No special evidence obtained in Canada

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. No evidence of this

XVI. Do you consider there can be too many breeding fish in a stream to its detriment by rooting up one another's pawning beds?

XVI. Not in rivers of such vast extent of those in Canada The numbers of fish in our British Columbia rivers are so incredibly great that some danger might be apprehended, but the spawning areas (upper waters) extend over many hundreds of square miles.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. Salmon traps or stake nets largely used in estuaries and along sea shore (on Atlantic), but drift nets allowed only as specified in chap 51, 57 and 58 Vict, section 2. Length of net stated in British Columbia Regulations, section 21.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, or how?

XVIII. Cases of danger or injury to salmon from such causes not reported by Dominion officers.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX Provided for by chap. 51, 57 and 58 Vict, section 6.

TAY FISHERIES.

Answers from Superintendent.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

1. No net allowed the mesh of which is less than an inch and three-quarters from knot to knot or seven inches round the square (inside) when wet.

II. Is there any weekly close season and for what period?

II. From 6 p m. on Saturday night till 6 a.m on Monday morning (36 hours) in river, estuary, and coasts.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds, what do you pay your bailiffs, and for what length of time?

III. We protect all salmon in close time and from unauthorised persons in open season We have funds from assessments on rental pay. Bailiffs from 21s to 28s. per week, according to rank; a number on all the year, with extra bailiffs in spawning season.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if license is according to size of net or its capability of capture?

IV. All from rents of fishings. No licences. Tacksmen rent the waters, and in some cases proprietors fish their own, the valuation of the latter being fixed by county assessor, and when let the valus is nett rental.

V. Could you give approximate take of salmon for the last twenty-four years?

V. Forty to fifty thousand salmon and twenty-five to thirty-five thousand grilse.

VI. Are salmon fisheries declining; if so, how long?

VI. They do seem to be declining a little, but this season they look better, and the show of grilse is hopeful. We had an enormous fishing in 1885, and all seasons have had a sort of dwarfed look since then.

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VII. I am quite of opinion that salmon fishings go in cycles, and I think we are now turning towards the better. But there is a constant danger to improvement in the daily increasing pollution of our rivers from increased sanitary arrangements in towns.

VIII. If so, to what cause do you attribute it?

VIII. I am not sure if there is any real falling off. But if there is, increased pollution from towns and manufacturing, especially bleaching and kindred industries, and in some cases prolonged and excessive net fishing are responsible.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. We have a hatchery which hatches 570,000 ova, expenses paid from general assessment on rental on river, estuary, and coast.

X. Do you turn the fry into river *before* the absorption of the "Umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

X. We turn the fry out fifty-four days after hatching, just when "umbilical sac" drops off. We turn them all into burns and small streams, with the exception of 70,000, which we place in rearing ponds, and keep them two years and feed with ground liver.

XI. Do you consider artificial breeding has been beneficial?

XI. I do not think artificial breeding has been done on an extensive scale enough to prove much, and the results have little effect on a large sea board such as the east coast of Scotland.

XII. Have you crossed different varieties of salmon, and with what results, and do salmon return to the same river?

XII. We don't cross any. I do not think salmon have any preference for their own river; they seem to go up the first river they happen to strike when they feel inclined to leave the sea. They seem to be greatly influenced by weather, etc.

XIII. Have you observed any change in the times salmon enter your rivers?

XIII. Some seasons they are later or earlier, but on an average much the same. Last season here was one of the latest and earliest, as we seemed to have a very early and a very late run, and one about the usual time.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. I do not consider I have evidence enough on this point, but I am inclined to think that smolts early down return as grilse the same season; the later run as young salmon the following year.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. I can't speak from any personal knowledge on this point.

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVI. Overcrowding may happen in a river with very small area of breeding ground, but I don't think there is any great danger in most rivers.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. Both drift and draft nets are used, no limit as to length, and fished in river and estuary right to the sea. Our estuary is two miles broad at mouth, and no danger of stopping fish from coming in.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. We have only one turbine; there is no provision for preventing fry from getting in, and I have not seen any damage done to fry by it. We have no motors otherwise, except ordinary mill wheels.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. No. We have to prove that salmon have been actually killed by such pollution or poison before we can secure a conviction, and as a number of fish die in the rivers at spawing times. There is always a difficulty in fixing on those actually poisoned.

ALEX. LUMSDEN,
Superintendent of Tay Fisheries.

RIVER UGIE, ABERDEENSHIRE.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

II. Is there any weekly close season, and for what period?

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if license is according to size of net or its capability of capture?

V. Could you give approximate take of salmon for the last twenty-four years?

VI. Are salmon fisheries declining; if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

X. Do you turn the fry into river *before* the absorption of the "umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon, and with what result, and do salmon return to the same river?

XIII. Have you observed any change in the times salmon enter your rivers?

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

I. There is no net fishing in the fresh water. In the sea the mesh is limited to four inches.

II. There is a weekly close season from 6 p.m. on Saturday to 6 a.m. on Monday for net fishing.

III. Yes. The water bailiff is paid 17*s.* per week. £20 of the year's wages is paid by assessment on the different proprietors. The balance is paid by Colonel Ferguson, of Pitfour.

IV. By assessment on the various proprietors. There are no nets licensed.

V. Statistics are only available for the past ten years. The approximate catch for that period is 700 salmon and 900 grilse.

VI. They have done badly this year and for a number of years back, but it is not known that they are declining. It may only be temporarily.

VII. It is considered only a bad cycle of years.

VIII. ——

IX. There is one hatchery kept up at the expense of the various proprietors.

X. The fry is turned into the river after the "umbilical sac" is absorbed. They are kept in a pond for the purpose, and are fed on fillet of beef or surloin of horse, along with the yolks of hard boiled eggs.

XI. Yes.

XII. No. It is doubtful if they return to the same river.

XIII. No.

XIV. Three years.

XV. They are supposed to feed on small fish, but their movements are not known.

XVI. There might be. There is no excess of fish noticeable on the Ugie.

XVII. Fixed nets are used and are kept 200 yards from the mouth of the river.

XVIII. Yes, there are several water wheels on the river, and they are not fenced.

XIX. Yes.

RIVER SEVERN.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

II. Is there any weekly close season, and for what period?

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds, what do you pay your bailiffs, and for what length of time?

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size of net or its capability of capture?

I. As to mesh, yes; two inches from knot to knot. No regulations as to size of nets.

II. Yes; nine Saturday to six Monday.

III. (1) Yes. (2) Barely. (3) Our bailiffs are engaged for the whole year, and wages range from 16*s.* to 23*s.* a week.

IV. By licences. We are bound to give licences to every one asking. The maximum amount charged for movable nets is £5; it varies to £2 according to the place where the net is used, tidal nets paying more than fresh nets.

V. Could you give approximate take of salmon for the last twenty-four years?

V. I should say an average of £12,000 over the whole time.

VI Are salmon fisheries declining; if so, how long?

VI. Yes. I think since 1890, when the Liverpool waterworks were completed.

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VII. Absolute deterioration. We are catching too many fish.

VIII. If so, to what cause do you attribute it?

VIII. The doing away of the summer freshets by the waterworks has increased the catching power of the lower nets and the increase of coarse fish.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. There are two, mainly supported by private persons. The Board does not contribute.

X. Do you turn the fry into river *before* the absorption of the "umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon, and with what result, and do salmon return to the same river?

XIII. Have you observed any change in the times salmon enter your rivers?

XIII. Yes, in my opinion we are losing our early spawning fish. They come later.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVI. Yes, under certain circumstances.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. Yes. No. Yes.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. A few only with gratings of iron bars.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. No.

Chairman Severn Fishery Board.

CAMEL FISHERY DISTRICT.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. Not exceeding 200 yards in length measured along the head rope, when wet size of mesh 1½ inches from knot to knot.

II. Is there any weekly close season, and for what period?

II. Twelve o'clock noon on Saturdays to six o'clock on Monday morning.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. Yes. No. £1 a week, one permanent; one temporary for three months.

IV. How are these funds obtained. If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size of net or its capability of capture?

IV. From licences. £2 for drift or hang net not exceeding 200 yards in length.

V. Could you give approximate take of salmon for the last twenty-four years?

V. No.

VI. Are salmon fisheries declining; if so, how long?

VI. Yes. For the last twenty years, but there is a great increase in the number of salmon peel in the Camel now.

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VII. A deterioration of fisheries.

VIII. If so, to what cause do you attribute it?

VIII. The action of floods, etc, on the spawning beds making them too hard for the salmon to bring their spawn.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. No.

X. Do you turn the fry into river *before* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon and with what result, and do salmon return to the same river?

XIII. Have you observed any change in the times salmon enter your rivers?

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XI. Not as beneficial as making beds and leaving the fish to spawn in the natural way.

XII. We have not crossed.

XIII. They are later.

XIV. Salmon fry do not as a rule go to the sea in the first year.

XV. Small fish, etc. They do herrings, for instance.

XVI. Not if properly constructed, spawning beds are made at the tails of pools.

XVII. They are used. Limited to two hundred yards as far as the tide flows.

XVIII. One fenced.

XIX. Yes.

TAY DISTRICT SALMON FISHERIES BOARD.

Answers by Clerks.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

II. Is there any weekly close season, and for what period?

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

IV. How are these funds obtained. If from licencee, please state how nets are licensed, and amounts charged, and if licence is according to size of net or its capability of capture?

V. Could you give approximate take of salmon for the last twenty-four years?

VI. Are salmon fisheries declining; if so, how long?

I. Meshes must not be less than seven inches round.

II. Yes. Thirty-six hours, from 6 p.m. on Saturday to 6 a.m. on Monday.

III. Yes. Good staff of bailiffs. Expenses raised by assessment. Wages from 21*s.* to 28*s.* per week; twenty kept on during close season and eight during the open season.

IV. Funds are raised by assessment on the rental of salmon fishings, as shown in the Valuation Roll. No licences.

V. No.

VI. The rental of the salmon fishings, which is the only criterion in this district, is being well maintained. This increase of rental is due not so much to increase in the run of fish as to (first), the increased rents given for sport, and (second) to reduction of working expenses in the net fishings, which are now being worked by a syndicate, who are practically lessees of the whole net fishings in the river.

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

X. Do you turn the fry into river *before* the absorption of the "umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon and with what result, and do salmon return to the same river?

VII. The Tay experiences cycles of good and bad seasons as in other crops.

VIII. The general increase of pollution of the river has doubtless a prejudicial effect on the fishings.

IX. One hatchery maintained by the Tay District Board from their ordinary assessment.

X. They are turned out into the river just when they require food.

XI. Artificial breeding is carried on to such a small extent that it is difficult to say whether it has been beneficial or not.

XII. No.

XIII. Have you observed any change in the times salmon enter your rivers?

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIII. No, except that the fish are kept back through want of food.

XIV. Cannot say.

XV. Cannot say.

XVI. This might happen, but the Superintendent of the Tay district informs us that he has not seen it, except where there are obstructions on the river, and a large number of salmon coming to a point and spawning below the obstruction.

XVII. Both drift nets and draft nets are used. There is no limit to their length, and they are fished down to the open sea.

XVIII. One turbine. No protection for fry.

XIX. Before the provisions of the Fishing Act can be enforced it has to be shown that the deleterious matter put into the river has done actual injury to the fish. County local authorities have of course power to prevent pollution of streams under their Acts of Parliament.

WYE FISHERIES DISTRICT.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

II. Is there any weekly close season, and for what period?

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

IV. How are these funds obtained. If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size of net or its capability of capture?

V. Could you give approximate take of salmon for the last twenty-four years?

VI. Are salmon fisheries declining, if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

X. Do you turn the fry into river *before* the absorption of the "umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XII. Have you crossed different varieties of salmon and with what result, and do salmon return to the same river?

XIII. Have you observed any change in the times salmon enter your rivers?

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

I. Yes. Draft nets must not be more than 200 yards long. Beating nets twenty yards. Mesh of nets, two inches; after 25th of June to end of the season, 2½ inches from knot to knot when wet.

II. Forty-two hours weekly close season. No night netting in fresh water for salmon before May 15th, and no beating net used before May 16th.

III. Yes. Private keepers are also made bailiffs. Estuary protected by lessees of net fisheries. Not sufficient funds. Wages vary. Additional water-bailiffs are put on according to the spawning season.

IV. From licences. The licence is according to capability of capture.

V. No.

VI. Yes, for some years. See Inspector of Fisheries annual report.

VII. In upper and middle waters a steady decrease, but a bad cycle of years in the tidal fisheries.

VIII. Partly drought; want of funds to protect the spawning fish. Over netting is also alleged, but the Executive Committee on this point disagree.

IX. No.

XIII. There is an opinion held by some that the fish run earlier.

XIV. Can give no opinion.

XV. Refer you to the Fishery Board for Scotland Report on the Life History of Salmon, 1898.

XVI. Do you consider there can be too many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XVI. Certainly.

XVII. Only draft nets; length limited to 200 yards, but not used in the estuary.

XVIII. No.

XIX. Very little pollution in the Wye, etc., but the laws are not drastic enough.

MONTROSE.

9th October, 1899.

H. W. Moore, Esq.,
Cliff, Belleek,
County Fermanagh,
Ireland

Dear Sir,—

Your letter of 7th to hand to-day, you ask a number of questions which are very difficult to answer.

The only river in Scotland that we have a particular knowledge of the nets having been removed is the Southesk, in Forfarshire, just by Montrose; the nets were taken off the river a few years ago, but netting still continues in the sea. This river is a small one, and therefore in summer months is very small with dry weather; we are inclined to say that so far as angling for salmon is concerned in this river, it is practically no better than when it was netted, because the river is so small in summer months, and the water is almost stagnant, and fish will not remain in it. They sometimes enter for a day or two, and then fall back to the sea. There are some rivers which have been partially restricted, but we are not in a position to state what the results have been. In the large rivers, no doubt, angling will be improved, but we are inclined to think that the smaller rivers can have benefited very little, owing to the same cause as the Southesk; in any case, unless the water of the river is pure and sweet, and the bed of the river kept free from growth, we do not think that the taking of nets off will be compensated for by increased angling. For the last few years salmon have been scarce, and therefore angling has been poor in proportion to the scarcity of fish. This season the rivers in this neighbourhood were not stocked till the beginning of October; the fish were lying at the mouths of the rivers unable to ascend till a flood came in the beginning of October.

The commercial part of salmon fishing has been bad for the last few years; it is difficult to attribute any cause to this. Some people are inclined to blame over-fishing; others pollution; others the ever increasing of draining of farms up country, which affects the rivers in this way. In former years when there was no extensive draining, heavy rain took a long time to soak through the ground and reach the river. The river might be in moderate flood for a fortnight or a month, whereas nowadays the water all reaches the river in a day or two, with the result that the fish may perhaps all get up a certain distance and be collected in large numbers in one or two pools, instead of being all spread over the river. This crowding of fish in one or two pools no doubt tends to increase disease, and also the spawning of the fish is wasted, as with a small space for spawning purposes, the spawning beds are often turned over three or four times, with the result, of course, that the spawn of all the fish except the last lot is lost. It is impossible what to attribute the scarcity to. In the past, cycles of bad years have been known, and sometimes after a very bad year a good year has unexpectedly followed.

Regarding the close time, there is a proposal at present to shorten the netting season on the Tay by six days, in order to allow fish to ascend. Providing sufficient water came at the right time this would perhaps be successful, but it is not often the river has a flood of any consequence before the month of September, so that the fish would simply have to lie in the estuary till the flood came, although a small proportion of them would perhaps work up the river. These fish lying in the estuary during the time when other rivers in Scotland are open would be a great temptation to poaching. The taking of six days from the end of the season would mean a serious loss to netters, which it is doubtful if anglers would gain to any extent. There is an Act coming out at present to amend the Tweed Act, and there is some talk about making the weekly slap forty-eight hours instead of twenty-four.

We do not know of any other information we can give you. Perhaps the yearly Blue Book (Salmon Fishings), which the Fishery Board for Scotland publish, might be of service to you.

Yours faithfully,

Jos. Johnston and Sons.

VII

Documents put in by Herr Landmark, Chief Inspector of Fisheries, Norway.

(1.)—ANSWERS TO THE QUERIES IN REGARD TO THE NORWEGIAN SALMON FISHERIES.

I Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. In nets used *for the purpose of catching salmon or sea trout* in the sea (including estuaries or fjords) the legal minimum size of the mesh is fifty-eight mm. (measured between the centre of the knots—four knots to each mesh when wet). The same applies to rivers—tidal as well as fresh water—frequented by *salmon* proper. If salmon or sea trout are caught (unintentionally) by nets with a smaller mesh in the sea or rivers aforesaid, they should be immediately returned to the water, if their length does not exceed fifty-five cm.—if salmon, or forty cm.—if sea trout.

There is no general limitation as to size of *nets*.

II. Is there any weekly close season, and for what period?

II Forty-eight hours from Saturday, 6 o'clock, p.m., till Monday 6 o'clock, p.m., applies to all fishing apparatus *except rod and line*.

N.B.—By local bye-laws (issued by Government if petitioned by the "Amtsthing") the weekly close season in most of the sea districts, and in several rivers, has been extended to seventy-two, or in some few places even to ninety-six hours, so far as the most deadly sorts of apparatus are concerned. On the other hand, the close season has been shortened—by local bye-laws—in a few, but unimportant cases

The general annual close season extends, on rivers, from August 26th till April 30th, provided however, that rod fishing is permitted till September 14th (all duties included).

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. Water-bailiffs have been appointed so far as the available funds will allow; but these are far too limited, the total amount spent annually in salaries for the bailiffs not exceeding kr. 30,000 as both for tidal and fresh waters The time may vary, but as a rule the bailiffs are acting, I believe, till the river freezes up.

IV. How are these funds obtained? If from licences, please state how nets are licensed, and amounts charged, and if licence is according to size or its capability of capture?

IV. Excepting some small sums paid voluntarily by private individuals, half the amount is paid by Treasury, and the other half is levied on the fishermen according to their take. There is no licence duty on the fishing apparatus.

V. Could you give approximate take of salmon for the last twenty-four years?

V. *Vide* enclosed list. (*See page* 42.)

VI. Are salmon fisheries declining; if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

VI., VII. and VIII. About the middle of the century, when for the first time steps were taken to protect the Norwegian salmon fisheries. They had been rapidly deteriorating for a series of years, which was due, I believe, principally to the fact that the fish were not protected in the spawning season. Such protection being given by the Salmon Fisheries Act, 1848, the yield commenced to increase Later on—more especially in the years 1863, 1866, 1869, 1878 and 1891—more stringent laws were passed, and there is no doubt, in my opinion, that our salmon fisheries have been greatly benefited thereby. But the enormous increase year by year of the number of "Kilenoter" (bag-nets) on the coast and the fjords render it difficult to keep up the stock of fish; because too few fish are allowed to enter the rivers and reach their spawning beds, and I myself am of opinion that the number of fish (salmon) in our waters is, at present, rather decreasing than increasing, what certainly would not have been the case if the number of fixed nets had been considerably less.

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them

IX. About thirty, yielding annually a number of about 3,000,000 of salmon fry. Two of these hatcheries belong to Government, the others to private individuals. No tax for their support is levied on the fisheries; but as a rule Government pays half the cost of their first erection, and contributes a small amount towards defraying the annual expenses.

X. Do you turn the fry into river *before* the absorption of the "umbilical sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

X. In the two Government hatcheries the fry are kept until late in the autumn, mostly in the same boxes in which they were hatched, and they are fed about five months on raw beef liver. [Concerning the details I may be allowed to refer to the enclosed pamphlet, "*Om Opdrætning af Laxyngel*" (*For Pamphlet, see Appendix, Part* III.) For the following years the results have been still more satisfactory.] In one of the private hatcheries the same course is adopted; in the others the fry are kept only till the umbilical sac is *nearly* absorbed.

XI. Do you consider artificial breeding has been beneficial?

XI. I do. It is difficult, however, to prove by exact figures the correctness of this opinion, because during the last three or four decades many different agencies, partly beneficial, partly injurious, have been tending more or less constantly, to improve or to disparage the produce of our salmon fisheries.

XII. Have you crossed different varieties of almon, and with what result, and do salmon return to the same river?

XII. No experiments with crossing of different varieties of salmon have been made.

We have strong proofs that salmon, as a rule, do return to the river in which they have spent their infancy. The rather extensive experiments that have been made in our country with marking of salmon prove, however, that exceptions sometimes, though rarely, occur.

XIII. Have you observed any change in the times salmon enter your rivers?

XIII. No; but to some extent the time depends, of course, upon the earliness or lateness of the different seasons.

XIV. How long do you consider the fry after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. I do not venture to give an opinion.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. Principally herring or, in the northern districts, launce (Ammodytes). They very often pass the mouths of certain rivers to the benefit of other rivers.

XVI. Do you consider there can be many breeding *fish* in a stream to its detriment by rooting up one another's spawning beds?

XVI. I do not think this is ever the case in Norway.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. Yes; and there is no legal limit to their length. Small meshed nets are prohibited, by local bye laws, at the mouth of several rivers, and in a few cases the same applies even to large meshed nets. The distance varies, and may sometimes exceed one English mile.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. As yet there are not many, but the number is steadily increasing. Up to this date there is no clause in our laws requiring a grating; but probably we shall soon have such a clause introduced.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. Oh, yes, fairly well. Government is empowered to issue the required directions.

XX. Any information regarding the migration of salmon would be valuable.

XX. The smolts descend the rivers in spring, and so far as I have been able to make out, they at once start for the open sea and, as a rule, do not approach the shore till they have become grilse. Salmon enter the rivers partly in May, but principally in June and July and some few later; having spawned—which in most rivers takes places in October, but in some not till November or December—a number drop down at once into the sea, but great numbers remain in the river till next spring.

XXI. What are the limitations enforced in Norway in connection with the use of nets in the estuaries and tidal part of rivers?

XXI. Generally speaking, the same rules apply to the fishing in the estuaries and tidal parts of rivers as anywhere else. But by local bye-laws the use of different kinds of nets, both fixed and moveable ones, have been prohibited at some distance from the mouth of rivers. (*See above*, XVII.)

XXII. Have there been any changes in the weekly close season, and what results have ensued?

XXII. Up to the year 1893 the *regular* weekly close time was 24 hours (excepting for rod and line). During the years 1893 and 1894 it was 72 hours; since that year 48 hours. But by Acts of 1869 and 1876 Government was empowered—if petitioned by the "Amtsthing"—to extend the close season for bag net and similar appliances on the sea and for nearly all fishing apparatus (except rod and line) on the rivers. And through bye-laws issued by virtue of these Acts, the close season, during the last 25 years (or so about), in most sea districts, has in fact been 72 hours, or in some districts even 96 hours. The same applies to some (comparatively few) rivers. It is clearly proved that this extension of the close season has allowed a considerably greater number of fish to ascend the rivers and spawn there. For an instance I may mention our best salmon river, the Laagen. On this river the produce was quadrupled during a period of fourteen years, in which the close season was 96 hours.

XXIII. Have ova from Norwegian salmon been supplied, and from what place?

XXIII. Not regularly or to any great extent. But upon application I shall probably be able, most years, to furnish a moderate number of eggs.

A. Landmark.

Christiania, Norway, March 8, 1900.

(2.)—Weight of Salmon taken in Norwegian Waters in the years 1876–1898 (Kilogrammes).

Year.	Total Catch (Sea and Rivers)	In the Rivers	Number of Rivers.	—
1876, . .	547,787	185,859	54	Before drawing conclusions from the present figures the following points should be taken into consideration :—
1877, . .	538,174	189,775	54	
1878, . .	530,980	181,988	54	
1879, . .	460,175	144,324	54	1. In tidal waters far the greatest proportion of the fish are taken by "Kilenoter"—a kind of fixed net, rather like the Scotch bag net; but the number of such nets used in our waters has increased immensely during the period, being in 1876 about 1,700, but in 1898 about 7,100.
1880, . .	458,482	149,520	55	
1881, . .	538,840	152,039	55	
1882, . .	433,484	144,685	55	
1883, . .	624,223	213,311	55	
1884, . .	782,797	245,679	79	2. As will be seen from the last column the figures for the last years include about twice as many rivers as the figures for the first years of the period. But, as a rule, it may be said that the rivers that have been added in the reports for the later years are of less importance than those comprised by the reports for the first years only.
1885, . .	916,976	276,055	79	
1886, . .	754,023	229,197	79	
1887, . .	800,059	235,706	89	
1888, . .	896,387	219,761	89	
1889, . .	863,941	194,102	89	
1890, . .	899,105	244,658	89	3. The figures giving the weight of the take do not claim to be perfectly correct. Probably all of them are too small, and more so for the first than for the last years of the period. In fact there is therefore little less difference between the takes in the beginning and the end of the period than shown by the figures.
1891, . .	1,145,852	249,073	93	
1892, . .	1,016,298	235,575	93	
1893, . .	877,783	198,054	93	
1894, . .	765,984	199,759	93	
1895, . .	926,991	221,447	108	
1896, . .	966,737	207,327	108	
1897, . .	1,245,062	250,000	114	
1898, . .	930,000	220,000	114	

VIII.

Documents put in by Mr. R. L. Moore, J.P., D.L.

(See the Evidence of Mr. Moore, qq. 6299–6301.)

BUSH.

(4.)—R. M. Douglas, Portballantrae, Bushmills.

I. Has there been during recent years any steady decrease in the supply of marketable salmon?

II. If so, what is the probable cause of such decrease:

(*a.*) Increased poaching?
(*b.*) Poisoning rivers?
(*c.*) Destruction of fry by turbines, or otherwise?

III. Has any decrease been observed in the supply of spawning fish on the beds?

IV. Is there any noticeable increase or decrease in recent years in the number of fry observed:

(*a.*) In the breeding streams?
(*b.*) In the main river descending to the sea?

V. Do you know anything of the movements of fry after their descent to the estuary?

VI. Do you know if salmon are killed to any extent in the sea or estuaries by herring, mackerel, trawl, or other nets not being salmon nets?

VII. Do you know of any destruction to ova or young salmon by cormorants, mergansers, ducks, water ousels, or other birds that prey on them; or have they been preyed on or injured by water scorpions, leeches, or predatory or rapacious birds?

VIII. What suggestions have you to make with respect to alterations in the Fishery Laws, or for obtaining improved protection?

IX. Would you recommend the erection and maintenance of hatcheries by the aid of public funds? and, if so, on what river or rivers in your district?

X. Would you suggest that an annual Government grant should be made to some scientific body for the purpose of elucidating the life history of salmon, and for discovering means of increasing their food supply; and also for ascertaining the principal causes of their destruction, and guarding against same?

XI. Has angling declined in recent years on your rivers? If so, can you suggest any reason?

I. Yes; for four years prior to 1898.

II. (*a.*) I don't attribute it to poaching.
(*b.*) Flax water, certainly, is one cause.
(*c.*) No damage in Bush by turbines.

III. No. Plenty of fish on the redds; sometimes, we think, too many.

IV. Yes, in 1898. I have not observed it in other years.

V. No.

VI. I don't think so, except by licensed trammel nets; at least, about here.

VII. We blame seagulls and cormorants; mergansers and ducks we know nothing of. There was great destruction of fry by grey gulls on this coast in 1898.

VIII. I believe it would be an advantage if the owners of breeding rivers had more in their discretion as to stopping the ascent of fish, so as to see that the best only got to the beds.

IX. Yes.

X. It could do no harm. I cannot see how their food could be increased.

XI. It has. In the Bush, which is a small river, I attribute the most of it to the land drainage.

DEE AND DON.

Professor Davidson, salmon fishery proprietor and tenant, member of the Dee and Don Fishery Boards, Aberdeen, Scotland. Thirty-five years' experience.

I. Has there been during recent years any steady decrease in the supply of marketable salmon?

II. If so, what is the probable cause of such decrease:

(*a.*) Increased poaching?
(*b.*) Poisoning rivers?
(*c.*) Destruction of fry by turbines or otherwise?

III. Has any decrease been observed in the supply of spawning fish on the beds?

IV. Is there any noticeable increase or decrease in recent years in the number of fry observed:

(*a.*) In the breeding streams?
(*b.*) In the main river descending to the sea?

V. Do you know anything of the movements of fry after their descent to the estuary?

VI. Do you know if salmon are killed to any extent in the sea or estuaries by herring, mackerel, trawl, or other nets not being salmon nets?

VII. Do you know of any destruction to ova or young salmon by cormorants, mergansers, ducks, water ousels, or other birds that prey on them; or have they been preyed on or injured by water scorpions, leeches, or predatory or rapacious birds?

I. No, there has not. It varies, good and bad years. But if you take a seven years' average, there is no decrease.

II. On some rivers, such as the Don, poisoning by mill discharge, sewage, and turbines, have injured the fisheries.

III. Some seasons, but not on an average.

IV. Some years a good appearance, others not so good. Varies in the main river descending to the sea.

V. No, I do not.

VI. They are not killed by these nets in the sea or estuaries.

VII. I am of opinion that wild birds destroy a good deal of ova and young salmon; they should be shot.

VIII. What suggestions have you to make with respect to alterations in the Fishery Laws, or for obtaining improved protection?

VIII. The fines and terms of imprisonment should be increased.

IX. Would you recommend the erection and maintenance of hatcheries by the aid of public funds? and, if so, on what river or rivers in your district?

IX. I believe hatcheries are beneficial to the fisheries.

X. Would you suggest that an annual Government grant should be made to some scientific body for the purpose of elucidating the life history of salmon, and for discovering means of increasing their food supply; and also for ascertaining the principal causes of their destruction, and guarding against same?

X. I think a Government grant should be given. Nets should be kept in the sea all the close season, and the condition of the fish carefully examined, after which to be returned to the sea. We are in ignorance of the condition of the fish in the sea a great portion of the year.

XI. Has angling declined in recent years on your rivers? If so, can you suggest any reason?

XI. Angling has been very poor for the last two years in the Scotch rivers. Scarcity of fish.

TWEED SALMON NET FISHERY.

I. Is there any limitation in either tidal or fresh water rivers as to size of net or mesh used?

I. The mesh is restricted all over to 1¾ inches from knot to knot, or seven inches round, except nets used solely for taking herrings or shrimps, and nets used solely for landing fish with rod and line. Double nets are forbidden.

II. Is there any weekly close season, and for what period?

II. There is a weekly close season for nets from 15th February to 14th September, from 6 o'clock of the Saturday afternoon to 6 o'clock of the following Monday morning, and for stake and bag nets from low water next in point of time before 6 o'clock of the Saturday afternoon to the low water next in point of time before 6 o'clock of the following Monday morning.

III. Do you protect salmon when spawning in the tributaries? If so, have you sufficient funds; what do you pay your bailiffs, and for what length of time?

III. Yes. A regular force of bailiffs is employed for that purpose. Smolts are protected from 1st April to 1st June. The protection expenses of the river from 1st June, 1898, to 1st June, 1899, amounted to £2,667 7*s.* 10*d.* These are the expenses of the watching forces only, and do not include prosecutions, clerk's salary, &c.

IV. How are these funds obtained? If from licences, please state how nets are licensed and amounts charged, and if licence is according to size of net or its capability of capture?

IV. By statutory assessment of 20 per cent on the rental of the river. No licences.

V. Could you give approximate take of salmon for the last twenty-four years?

VI. Are salmon fisheries declining, if so, how long?

VII. If declining, do you consider it a bad cycle of years (having experienced such before), or is there an absolute deterioration of salmon fisheries?

VIII. If so, to what cause do you attribute it?

V., VI., VII, VIII. See Mr. Paulin's statement. (*See page* 46.)

IX. Have you many hatcheries, and who bears the cost, or is there a tax levied on fisheries to support them?

IX. There are no hatcheries on the river, except a small private hatchery at Mertoun, belonging to Lord Polwarth.

X. Do you turn the fry into river *before* the absorption of the "Umbilical Sac" or *after* the absorption, and how do you keep them to the latter period? Are they fed, and on what?

XI. Do you consider artificial breeding has been beneficial?

XI. We have no sufficient experience to answer.

XII. Have you crossed different varieties of salmon, and with what result, and do salmon return to the same river?

XII. No experience of crossing. It is generally understood on Tweed that salmon return to the same river.

XIII. Have you observed any change in the times salmon enter your rivers?

XIII. Reference is made to replies previously sent by Sir William Crossman. He is now inclined to modify the opinion that the fish appear, of late years, to have been somewhat latter in entering the river, and markedly so this year. The proportion of fish on the coast caught in July, August, and September, up to close of net fishing, have not, he says, varied much during the last few years.

XIV. How long do you consider the fry, after descent to sea, remains there before it returns as grilse or young salmon of the first year to the fresh water?

XIV. It is not safe to venture an opinion on this subject.

XV. What do the salmon feed on in the sea, and do they follow "schools" of small fish, thus passing the mouths of certain river or rivers to the benefit of other river or rivers?

XV. Salmon, in the sea, feed upon the smaller fish, such as sand eels, herrings, &c., many of which have been taken out of the stomachs of salmon caught at Goswick and elsewhere on the river. One cannot say whether the salmon follow "schools" and pass the mouth of one river to the benefit of another. From the configuration of the coast, it cannot be the case as regards Tweed.

XVI. Do you consider there can be too many breeding fish in a stream to its detriment by rooting up one another's spawning beds?

XVI. Yes.

XVII. Are drift nets or draft nets used, and is the length limited? Are they permitted in all estuaries, or, if not, how far are they kept from mouths of such?

XVII. Drift nets are illegal under the Tweed Acts, except in the small portion of the sea-coast which is in Scotland. This portion is distant three or four miles from the mouth of the river. The Tweed has no estuary. Even in the portion mentioned, drift nets are hardly used at all at present.

XVIII. Have you any water motors, such as turbines, and are they fenced so as to prevent fry entering them, and how?

XVIII. Yes. There is at least one turbine, which is not fenced against fry. There is no provision in the Tweed Acts for water wheels being so fenced.

XIX. Do your laws enable you to successfully prevent any poisonous or deleterious matter entering your rivers?

XIX. No.

GLENTIES.

JOHN F. POMEROY.

I. Has there been during recent years any steady decrease in the supply of marketable salmon?

I. Up to the last three years, I could not say that there had been any great decrease, but during 1897, 1898, and 1899 the catches have been much below previous ones.

II. If so, what is the probable cause of such decrease—

(*a*) Increased poaching?
(*b*) Poisoning rivers?
(*c*) Destruction of fry by turbines, or otherwise?

II. On the Glenties river there is no poisoning, and there are no turbines, and poaching has not been on the increase. Possibly a larger number of boats fishing on the coast by illegal methods may have something to do with it.

III. Has any decrease been observed in the supply of spawning fish on the beds?

III. No, I think not.

IV. Is there any noticeable increase or decrease in recent years in the number of fry observed:

(*a*) In the breeding streams?
(*b*) In the main river descending to the sea?

IV. The hatchery here has been in existence since 1895, and I notice a considerable increase of fry below the hatchery.

V. Do you know anything of the movements of fry after their descent to the estuary?

V. Nothing whatever.

VI. Do you know if salmon are killed to any extent in the sea or estuaries by herring, mackerel, trawl, or other nets not being salmon nets?

VI. I do not think that, in the North-west of Ireland, salmon or white trout are caught in drift nets, though I have seen grilse and white trout taken in this way in the Killarney; but a good many salmon and white trout are caught by seining ostensibly for flat fish.

VII. Do you know of any destruction to ova or young salmon by cormorants, mergansers, ducks, water ousels, or other birds that prey on them; or have they been preyed on or injured by water scorpions, leeches, or predatory or rapacious birds?

VII. I think more harm is done by ducks than by all the other bird agencies put together.

VIII. What suggestions have you to make with respect to alterations in the Fishery Laws, or for obtaining improved protection?

VIII. That Coastguards should be directed to stop all illegal fishing of all sorts and kinds at sea, and that the police should have power to detain all salmon on land till proof is given that they have been legitimately obtained.

IX. Would you recommend the erection and maintenance of hatcheries by the aid of public funds? and, if so, on what river or rivers in your district?

IX. No. IX. is a difficult question to answer. Possibly a small percentage added to all licences, to be especially applied to aiding hatcheries, would be right.

X. Would you suggest that an annual Government grant should be made to some scientific body for the purpose of elucidating the life-history of salmon, and for discovering means of increasing their food supply; and also for ascertaining the principal causes of their destruction, and guarding against same?

X. There is nothing I am clearer about than the propriety of Government assistance on this subject.

XI. Has angling declined in recent years on your rivers? If so, can you suggest any reason?

XI. Yes, in a marked degree; but I think this is largely owing to the increased number of fishermen and induced shyness on the part of the fish.

APPENDIX TO THE REPORT—PART II.

SECTION C.

STATISTICS—II.

Consisting mainly of Returns of the Catch of Fish in various Fisheries, also a Return of the Number of Times the Rivers of the Kenmare District were Poisoned.

IX.

DOCUMENT put in by Mr. R. L. MOORE, J.P., D.L.

(See the Evidence of Mr. MOORE, q. 6299.)

(5.)—STATEMENT of the PRODUCE of TWEED SALMON NET FISHERIES disposed of by the BERWICK SALMON FISHERIES COMPANY (Limited) in the following years.

Year.	Salmon	Grilse.	Trout.
1876, . . .	4,985	11,145	15,463
1877, . . .	8,695	8,585	21,081
1878, . . .	6,748	2,704	18,651
1879, . . .	4,670	6,890	22,690
1880, . . .	4,407	4,325	13,037
1881, . . .	7,468	18,091	25,415
1882, . . .	13,831	4,881	19,482
1883, . . .	9,854	14,470	25,749
1884, . . .	5,773	7,567	15,408
1885, . . .	7,909	13,254	27,390
1886, . . .	7,408	11,425	23,894
1887, . . .	10,605	12,011	30,339
1888, . . .	8,843	11,008	23,712
1889, . . .	7,156	7,195	12,828
1890, . . .	3,852	9,297	28,556
1891, . . .	10,266	11,894	15,178
1892, . . .	10,078	8,414	12,480
1893, . . .	7,635	3,288	28,577
1894, . . .	3,700	8,258	28,339
1895, . . .	6,502	18,961	31,303
1896, . . .	17,377	8,658	24,097
1897, . . .	7,709	3,915	18,668
1898, . . .	6,291	3,623	22,892
1899, . . .	3,750	12,248	26,539

NOTE.—As it is very difficult to obtain a satisfactory estimate or approximation of the total "take" of the Tweed Salmon Fisheries the annexed table of the *actual* numbers disposed of by the Berwick Salmon Fisheries Company in the years mentioned is given. The fisheries included in the return vary very little from year to year and probably represent about $\frac{1}{3}$rds of the whole, and all are situated within the limits of the River Tweed as defined by the Tweed Fisheries Act, 1857. The fluctuations are very remarkable but the figures can hardly be held to show a definite decrease in recent years. If compared, however, with the results prior to the passing of the existing Tweed Acts the decrease is very marked.

GEO. L. PAULIN.

Berwick,

14*th November*, 1699.

X.

Document put in by Sir Francis Macnaghten, Bart., J.P., D.L.

BUSH FISHERY RETURNS, 1888 to 1899.

(See the Evidence of Sir Francis Macnaghten, qq. 4190, 4193, 4203–7.)

Fish Caught.

Year.	River.	Sea.	Total.	Weight in Lbs.
1888, . . .	111	4,155	4,266	26,960
1889, . . .	165	4,902	5,067	34,934
1890, . . .	18	4,012	5,113	28,480
1891, . . .	66	4,178	4,244	28,692
1892, . . .	147	2,513	2,660	18,179
1893, . . .	20	2,738	2,758	17,917
1894, . . .	571	5,960	6,531	37,032
1895, . . .	185	3,769	3,954	29,394
1896, . . .	725	1,991	2,716	16,886
1897, . . .	107	994	1,101	6,734
1898, . . .	84	998	1,082	6,354
1899, . . .	687	1,939	2,626	15,621

XI.

Document put in by Sir James Musgrave, Bart., J.P., D.L.

TEELIN SALMON FISHERY.

(See the Evidence of Sir James Musgrave, q. 5837, et seq.)

Comparative Returns of the Teelin Fishery, in Periods of Five Years, from 1875 to 1899.

Period.	Number of Fish.	Weight.
1880 to 1884, inclusive, . . .	9½ per cent. less.	8 per cent. less than previous 5 years.
*1885 to 1889, » .	150 per cent. more.	135 per cent. more than previous 5 years.
1890 to 1894, » . . .	5½ per cent. less.	4½ per cent. less than previous 5 years.
1895 to 1899, » . . .	39 per cent. less.	45 per cent. less than previous 5 years.

* Salmon ladder enabling salmon to enter Lough Unna established circ. September, 1885, and was extended circ. January, 1888.

XII.

DOCUMENT put in by Mr. W. ROCHFORT, J.P.

(See the Evidence of Mr. ROCHFORT, qq. 1018–1030.)

ESTATE OF LADY M. CHARTERIS.

RIVER SUIR.

SALMON KILLED AT NEDDIN'S (1876–1899), AND CAHIR PARK (1883–1899).

CAHIR PARK WATER, CO. TIPPERARY.

Year.	No. of Fish (Salmon)	Total Weights.	Remarks.
1883,	85	1,030 lbs.	
1884,	46	664 „	
1885,	56	696 „	
1886,	50	650 „	
1887,	13	172 „	
1888,	36	347 „	
1889,	10	156 „	
1890,	21	340 „	
1891,	32	402 „	
1892,	51	458 „	
1893,	12	152 „	
1894,	45	739 „	
1895,	11	187 „	
1896,	8	135 „	
1897,	22	252 „	
1898,	25	411 „	
1899,	11	181 „	

NEDDIN'S WATER.

1876,	60	823 lbs.	
1877,	56	813 „	
1878,	77	836 „	
1879,	67	679 „	
1880,	36	406 „	
1881,	36	430 „	
1882,	84	1,016 „	
1883,	79	921 „	
1884,	67	899 „	
1885,	86	981 „	
1886,	43	458 „	
1887,	13	210 „	
1888,	25	220 „	
1889,	22	369 „	
1890,	10	167 „	
1891,	15	313 „	
1892,	42	460 „	
1893,	16	236 „	
1894,	32	579 „	
1895,	18	345 „	
1896,	8	159 „	
1897,	42	505 „	
1898,	21	341 „	
1899,	28	454 „	

WM. ROCHFORT, Cahir Abbey, Cahir, Co. Tipperary.

20th November, 1889.

XIII.

Document put in by Mr. James Butler, J.P.

(See the Evidence of Mr. Butler, qq. 3029–3034.)

(1) — WATERVILLE SALMON FISHERY.

Year.	No. of Salmon taken in Weir and River.								Taken by Seine at Sea.							In Seine and Weir.	
	January 1 to 16.	January 16 to 31.	February.	March.	April	May	June.	July.	Total in River.	April.	May.	June	July	Total at Sea.	Average weight January to May	Weight, June and July.	Total No. of Salmon.	No. of Trout.
1858,		160		75	8	142	26	280	95	787	–	–	–	–	–	9½	5	–	2,598
1859,		109		70	105	77	17	40	51	469	–	–	–	–	–	9¼	5	–	858
1860,		103		70	105	77	17	40	51	469	–	–	–	–	–	–	–	–	358
1861,		84		24	24	45	1	103	132	473	–	–	–	–	–	10	5½	–	821
1862,		41		39	53	28	5	266	14	445	–	–	–	–	–	10	5½	–	821
*1863,		65		89	85	22	16	236	123	635	–	–	–	–	–	10	6½	–	1 403
1864,	–		133	92	63	14	45	277	38	663	–	–	–	–	–	9½	6½	–	423
1865,	–		8	151	78	13	43	491	318	1,103	–	–	–	–	–	9¼	5½	–	1,999
1866,	–		30	170	93	42	92	544	113	1,090	–	–	–	–	–	10	5½	–	3,060
1867,	–		55	116	48	163	83	267	42	774	–	–	–	–	–	10½	5½	–	259
1868,	–		69	24	34	37	16	46	26	252	–	–	–	385	385	10½	6½	637	846
1869,	–		110	185	85	30	38	254	15	717	5	72	561	1,625	2,263	9½	5½	2,979	3,384
1870	–		38	67	126	89	43	204	62	617	112	3	206	1,356	1,677	11½	5½	2,294	2,453
†1871,	145		48	135	67	19	68	392	70	932	–	59	350	281	690	11	6½	1,622	4,436
1872,	48		88	97	69	4	43	253	32	634	60	161	8	426	655	12	6½	1,289	2,060
1873,	81		72	72	53	7	22	317	175	799	10	71	109	1,239	1,448	12½	6½	2,247	1,555
1874,	141		39	129	60	12	13	133	170	697	–	50	124	290	464	12½	5½	1,161	977
1875,	190		121	111	38	55	17	175	85	792	2	7	–	507	516	10½	6	1,308	2,585
1876,	47		72	150	48	52	65	198	51	693	–	33	285	598	916	11	6½	1,609	1,411
1877,	30		91	89	34	26	85	71	4	430	–	12	124	917	1,053	11½	6½	1 483	1 765
1878,	72		49	71	28	22	71	178	28	514	10	–	1	212	223	12	6½	737	1,430
1879,	138		11	79	46	56	98	174	80	682	–	3	76	146	225	–	–	907	1,701
1880,	65		48	75	27	17	24	169	102	529	6	69	25	813	913	–	–	1,442	1,827
‡1881,	26		7	264	121	–	33	131	89	671	170	65	28	338	601	–	–	1 272	1,026
1882	111		58	120	72	38	1	186	96	682	–	50	83	95	228	–	–	910	1,741
1883,	72		93	72	71	59	60	159	82	668	–	143	108	116	367	–	–	1,035	473
1884,	106		91	48	15	6	71	157	108	604	–	234	500	411	1,145	–	–	1,749	1,271
1885,	97		99	94	31	66	94	219	94	794	–	91	771	492	1,354	–	–	2 148	1,095
1886,	109		42	62	46	42	28	67	31	427	–	66	231	316	613	–	–	1 040	874
1887,	49		78	44	11	3	22	82	–	287	–	425	736	559	1,720	–	–	2,007	503
1888,	150		65	12	75	71	181	203	45	842	–	–	113	1,216	1,329	–	–	2,171	408
1889	32		77	74	50	95	67	233	3	632	–	–	222	789	1,011	–	–	1,613	648
§1890,	80		24	135	56	70	42	166	112	685	–	3	73	568	644	–	–	1,329	3,849
1891,	30		110	82	3	143	78	187	113	746	–	–	131	693	824	–	–	1,570	2,467
1892	45		91	95	90	28	62	216	144	704	–	–	112	583	695	–	–	1,399	2,134
‖1893,	48		59	160	20	25	19	133	59	523	–	84	180	651	915	–	–	1,438	1,338
1894,	102		44	34	73	58	12	384	146	853	–	4	509	710	1,223	–	–	2,076	4,830
1895,	118		25	3	214	58	60	20	37	535	–	7	428	901	1,336	–	–	1,871	1 159
1896,	105		97	139	89	5	10	62	280	767	–	72	92	389	553	–	–	1,327	261
1897,	84		13	176	83	30	–	331	75	792	–	–	–	–	–	–	–	–	818
1898,	38		45	68	28	61	3	159	109	511	–	–	–	–	–	–	–	–	423
1899,	20		33	35	5	61	37	119	38	348	–	–	–	–	–	–	–	–	201

* In 1863 fourteen days taken off beginning of season, and Weir opened seventy-two hours instead of thirty-six hours. Increased protection in spawning rivers commenced.
† Season change l from 16th to 1st January. fifteen days taken off July.
‡ Hard frost for three weeks in January, 1881
§ In 1890 fifteen days of August were taken off Seine boats
‖ A very dry Spring and Summer, water low.

XIV

Document put in by Mr. William Warden, J.P.

KENMARE FISHERY DISTRICT

Return Showing the Number of Times the Rivers in above District were Poisoned, from the Years 1890 to 1899, inclusive.

Year	Rivers.					
	Roughty	Sheen.	Sneem	Blackwater	Finnehy.	Ownstragh.
1890	7	3	—	—	—	—
1891,	6	4	—	—	—	—
1892,	6	5	1	—	—	—
1893,	10	—	—	—	—	—
1894,	4	—	—	—	—	—
1895	7	2	—	1	—	—
1896,	8	4	—	—	3	1
1897,	4	1	—	—	—	—
1898,	4	2	—	—	—	—
1899,	5	1	1	—	—	—
Totals,	61	24	2	1	3	1

H

XV.

Documents put in by Mr. James Butler, J.P.

(See the Evidence of Mr. Butler, q. 3037.)

(2.)—Return of Salmon and Trout taken in Waterville Fishery between 1805 and 1826.

Year.	Salmon.	Trout.	——
1805, . . .	1,567	1,197	In Weir.
1811, . . .	498	—	
1813, . . .	521	—	
1825, . . .	2,002	3,013	From January 6th to September 17th.
1826, . . .	687	8,827	

(3.)—Comparison of Annual Take of Salmon and Grilse, Salmon, Grilse, and Trout from 1858 to 1874, with Average Take of each description for twenty-four years, 1875–1898.

(See the Evidence of Mr. Butler, q. 3022.)

Year.	Waterville Weir.								Year.	Sea Fish Seine compared to average 1869–1896.	
	Salmon and Grilse.		Salmon.		Grilse		Trout.				
	Per Cent over.	Per Cent. under.	Per Cent over	Per Cent under.	Per Cent over	Per Cent. under	Per Cent over	Per Cent under.		Per Cent. over.	Per Cent. under.
1858, .	23	–	13	–	34	–	72	–	1869, .	146	–
1859. .	–	27	6	–	–	64	–	43	1870, .	82	–
1860,	–	27	6	–	–	64	–	43	1871, .	–	26
1861, .	–	26	–	45	–	5	–	45	1872, .	–	29
1862, .	–	30	–	53	–	5	–	45	1873, .	57	–
1863, .	average		–	22	25	–	6	–	1874, .	–	49
1864, .	3	–	–	11	20	–	–	71	1875, .	–	44
1865, .	72	–	–	26	184	–	33	–	1876, .	average	
1866, .	70	–	average		150	–	104	–	1877, .	1½	–
1867, .	21	–	12	–	31	–	–	82	1878, .	–	76
1868, .	–	60	–	51	–	67	–	44	1879, .	–	76
1869, .	12	–	20	–	2	–	126	–	1880, .	average	
1870, .	–	3	–	9	3	–	65	–	1881, .	–	34
1871, .	45	–	18	–	77	–	196	–	1882, .	–	75
1872, .	average		–	10	9	–	37	–	1883, .	–	60
1873, .	25	–	–	16	70	–	4	–	1884, .	24	–
1874, .	9	–	12	–	5	–	–	35	1885, .	47	–
									1886, .	–	33
									1887, .	87	–
									1888, .	44	–
									1889, .	10	–
									1890, .	–	30
									1891, .	–	10
									1892, .	–	24
									1893, .	average	
									1894, .	33	–
									1895, .	45	–
									1896, .	–	39

XVI.

Document put in by Mr. Maurice Davin.

(See the Evidence of Mr. Davin, qq. 2534–2536, 2578–2581.)

Return of Salmon Killed in Coolnamuck Weir from 1890 to 1899.

—	1890		1891.		1892.		1893.		1894.		1895.		1896.		1897.		1898.		1899.		Average Number per Month	
	Salmon	Grilse	Salmon	Grilse	Salmon	Grilse	Salmon	Grilse	Salmon	Grilse	Salmon	Grilse.	Salmon	Grilse.	Salmon	Grilse	Salmon	Grilse	Salmon.	Grilse.	Salmon.	Grilse
February, . .	Not fishing		10	–	–	–	–	–	1	–	2	–	13	–	6	–	4	–	–	–	4	–
March, . . .	,,	,,	6	–	8	–	5	–	1	–	12	–	7	–	2	–	8	–	4	–	5	–
April, . . .	,,	,,	7	–	33	–	33	–	7	–	14	–	33	1	5	–	15	–	13	–	16	–
May, . . .	2	–	25	7	85	5	105	–	40	3	102	–	29	–	79	2	34	1	30	5	59	2·3
June, . . .	3	16	14	86	39	78	45	42	126	232	55	28	12	17	53	93	54	51	37	103	48	75
July, . .	6	115	12	212	29	256	5	108	48	396	24	181	1	83	14	136	10	71	8	180	15	174
August, . . .	–	17	3	42	11	80	3	19	22	72	6	32	1	12	2	18	4	18	–	18	6	32
Total, . .	11	148	77	347	195	319	196	169	242	703	215	241	96	113	161	250	129	135	92	306	–	–
Combined Total,	159		424		514		365		945		456		209		411		264		398			

Average number of Salmon per year for 9 years, about . . 155

Average number of Grilse per year for 10 years, about . . 272

Total, . . 427

XVII.

Documents put in by Mr. P. L. Petrie.

(See the Evidence of Mr. Petrie, qq. 6587, 6597.)

(1.)—BANGOR FISHERY.

Return of the number of Salmon and Trout taken for the last 10 years by Draft Nets, 1890–1899, inclusive, at Bangor Salmon Fishery, Tallaghan Bay Estuary and Carramore Lake, County of Mayo. Lessees—Chas. and P. L. Petrie.

Year.	No of Salmon	—	No of Trout.	—
1890,	5,350	Average for 5 years—4,966	1,560	Average for 5 years—1,674
1891,	4,280		1,378	
1892,	6,479		2,296	
1893,	2,810		1,188	
1894,	5,913		1,952	
1895,	3,517	Average for 5 years—3,369	1,950	Average for 5 years—1,556
1896,	4,347		1,973	
1897,	2,192		1,257	
1898,	2,791		1,228	
1899,	4,001		1,372	

We have only had this fishery for the years stated, and we are unable to get the figures for 20 years as requested.

I hereby certify the above return is correct.

(Signed), P. L PETRIE,
Managing Partner.

Knoxbarrett, Ballina,
6th Nov., 1899.

Reply to Query—

(2) Seven draft nets are used on this fishery at different places.
(3) There have been no changes whatever for the last ten years (nor for 24 years to my knowledge).
(4) There are no hatcheries in this district.

P. L. P.

(2.)—COOLCRONAN FISHERY.

Return of the number of Salmon and Grilse taken for the last 21 years by Draft Nets, 1879–1899, inclusive, at Coolcronan Salmon Fishery, portion of Fresh Water, River Moy, near Ballina, County of Mayo. Alexander and P. L. Petrie, Lessees.

Year.	No of Salmon and Grilse	—
1879,	2,335	Average for 7 years—2,679
1880,	3,841	
1881,	3,459	
1882,	3,017	
1883,	2,205	
1884,	1,656	
1885,	2,243	
1886,	3,459	Average for 7 years—3,552
1887	1,279	
1888,	4,697	
1889.	2,821	
1890,	4,329	
1891,	2,601	
1892.	5,677	
1893,	934	Average for 7 years—1,583
1894,	3,524	
1895,	1,116	
1896,	1,180	
1897,	1,489	
1898,	1,353	
1899,	1 489	

I hereby certify the above return to be correct.

(Signed), P. L. PETRIE,
Knoxbarrett, Ballina,
Managing Partner.

6th Nov., 1899.

(2) Four draft nets are used on this fishery at different places.
(3) There have been no changes in the mode of capture for over 30 years.
(4) There are no hatcheries for artificial breeding in this district.

XVIII.

Document put in by Mr. Thomas Guihan

KENMARE.

Number of Salmon taken by Mr. Thomas Guihan in Kenmare with Draft Nets for the past Twenty Years from 1880 to 1899 (and no other Engine), as under.

Kenmare, *9th November*, 1899

Year.	—	Number of Salmon taken.	Trout.	Remarks.
1880, . . .	—	1,221	—	
1881, . . .	—	785	—	
1882, . . .	—	419	—	
1883, . . .	—	1,265	—	
1884, . . .	—	930	—	
1885, . . .	—	1,009	—	
1886, . . .	—	868	—	
1887, . . .	—	610	—	No trout taken, mesh too large.
1888, . . .	—	919	—	
1889, . . .	—	898	—	
1890, . . .	—	1,042	—	
1891, . . .	—	1,236	—	
1892, . . .	—	1,105	—	
1893, . . .	—	826	—	
1894, . . .	—	1,570	—	
1895, . . .	—	616	—	
1896, . . .	—	450	—	
1897, . . .	—	402	—	
1898, . . .	—	432	—	
1899, . . .	—	643	—	

XIX.

DOCUMENT put in by Mr. VILLIERS STUART, J.P., D.L.

(See the Evidence of Mr. STUART, qq. 1004–1008.)

BLACKWATER.

RETURN of FISH taken in MR. VILLIERS STUART'S FISHERY at DROMANA from 1886–1899, inclusive.

Year.	No. of Salmon Taken	No. of Peal Taken.	Total of Salmon and Peal.
1886, . . .	710	1,325	2,035
1887, . . .	889	2,239	3,128
1888, . . .	618	1,534	2,152
1889, . . .	626	1,561	2,187
1890, . . .	722	1,505	2,227
1891, . . .	772	1,960	2,732
1892, . . .	1,120	3,363	4,483
1893, . . .	1,286	2,169	3,455
1894, . . .	1,154	2,717	3,871
1895, . . .	1,699	4,522	6,222
1896, . . .	1,219	2,373	3,592
1897, . . .	793	1,384	2,178
1898, . . .	649	1,129	1,779
1899, . . .	496	1,935	2,431

NOTE.—Three nets fished from 1886 to 1895, two from 1895 to 1899

Year.	Salmon Two Nets—Actual Figures	Peal Two Nets—Actual Figures	Total of Salmon and Peal—Actual Figures
1895, . . .	1,133	3,015	4,148
1896, . . .	813	1,582	2,395
1897, . . .	529	923	1,452
1898, . . .	433	753	1,186
1899, . . .	331	1,290	1,621

The average of two nets has been added from 1891 to 1899. The other figures are from the returns, and are accurate.

XX.

DOCUMENT put in by Major HAMILTON, J.P.

(See the Evidence of Major HAMILTON, qq. 1864–1868.)

RIVER NORE.

RETURN showing the Number of Salmon caught in the Woodstock Seine Net and Weir from 1889 to 1899, inclusive.

YEAR.	Number of Fish Caught.
1889, ...	714
1890, ...	694
1891, ...	472
1892, ...	613
1893, ...	251
1894, ...	362
*1895, ...	488
1896, ...	847
1897, ...	732
1898, ...	715
†1899, ...	534

* Up to May, 1895, the inhabitants of Inistiogue and adjoining Townlands claimed an equal right with the owner of the fishery to fish within its limits. In 1895 an injunction was obtained from the Master of the Rolls restraining them from doing so.

Mr. Tighe now allows a certain number of those who claimed the right to do so—still to fish, subject to certain limitations.

The Return therefore gives no idea of the number of fish caught within the limits of the "several fishery."

† In this year the best tides fell on the weekly close time, otherwise the catch would have been greater.

XXI.

DOCUMENT put in by Mr. C. W. OSBORNE.

(See the Evidence of Mr. OSBORNE, qq. 2024–2025.)

RIVER BOYNE.

RETURN showing the Number of Fish caught in Mr. Osborne's Fishery on the Boyne from 1890 to 1999, inclusive.

YEAR.	Number of Fish Caught
1890, ...	200
1891, ...	278
1892, ...	336
1893, ...	159
1894, ...	165
1895, ...	168
1896, ...	115
1897, ...	159
1898, ...	192
1899, ...	227

XXII.

Document put in by the Right Hon. Lord Courtown.

Statement of Lord Courtown, Wexford District, in reply to questions on Net Fishing—Onnavarra River.

I.—The number of salmon and trout taken in nets in each of the last twenty years will be found in the annexed paper.

II.—There is no fixed net or weir; the only net used is a trammel, worked from a boat in about a mile of tide water.

III.—No change has been made in the nets or mode of capture within the last ten years.

IV.—There is no Hatchery for artificial breeding of fish in the district watered by this river.

This river is in the Slaney district, but not being an affluent of the river Slaney, can derive no benefit from the Hatchery on that river.

Onnavarra River Salmon and Trout taken in Nets.

Year.	Salmon.	White Trout.	Remarks.
1879, . . .	64	401	
1880, . . .	53	720	
1881, . . .	68	1,591	
1882, . . .	43	505	
1883, . . .	73	1,204	
1884, . . .	65	2,466	
1885, . . .	77	851	
1886, . . .	92	824	
1887, . . .	76	1,451	
1888, . . .	—	—	The complete record of salmon and trout was lost—about 100 salmon and 800 trout. A very good year.
1889, . . .	101	1,176	A good run of fish in May.
1890, . . .	84	1,162	
1891, . . .	122	784	A run of heavy fish in May.
1892, . . .	—	—	The complete record was lost—about 140 salmon and 600 trout. A very good year; 105 salmon were sold.
1893, . . .	126	1,634	
1894, . . .	123	335	
1895, . . .	127	426	
1896, . . .	68	730	
1897, . . .	110	398	
1898, . . .	59	408	
1899, . . .	19	184	The exceptional badness of this season is no doubt owing at least to some extent to the lowness of this river. The season for salmon and trout to run is always late in this river, so that the unusual drought of the past summer would act most injuriously. Large numbers of sea trout have been seen in the river since the beginning of the close season.

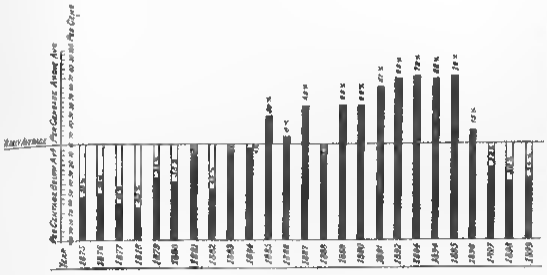
Most of the above salmon were peal

Document put in by Mr. THOMAS McDERMOTT.

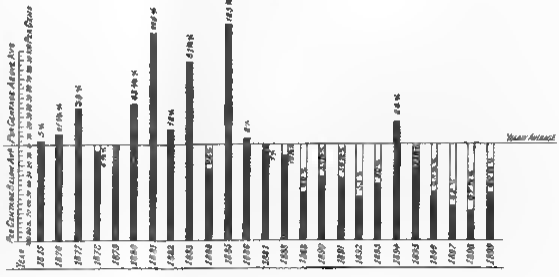
(See the Evidence of Mr. McDERMOTT, q. q. 5513-5515)

ANNUAL COMPARE FOR 25 YEARS OF SALMON AND GRILSE TAKEN ON THE FISHERIES SHEWN BELOW

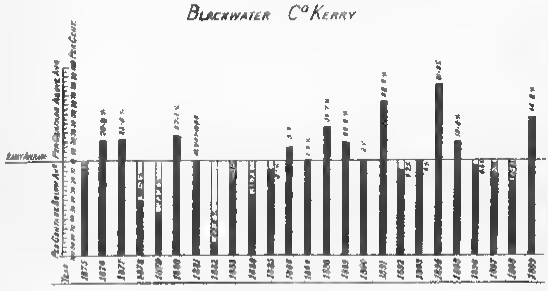
BLACKWATER – LISMORE



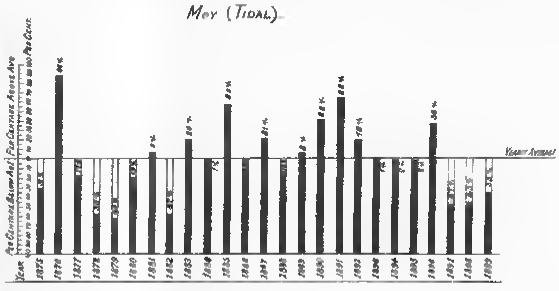
BANN NETS



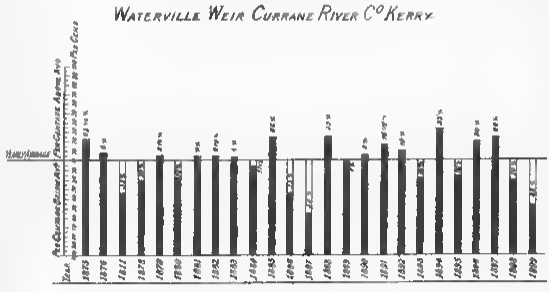
BLACKWATER C° KERRY



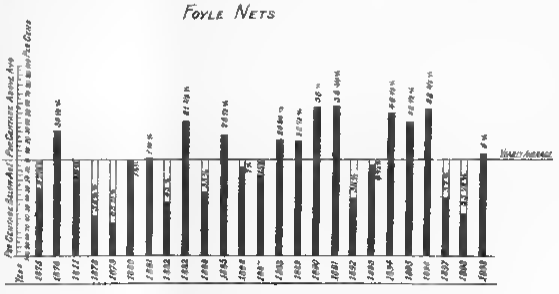
MOY (TIDAL)



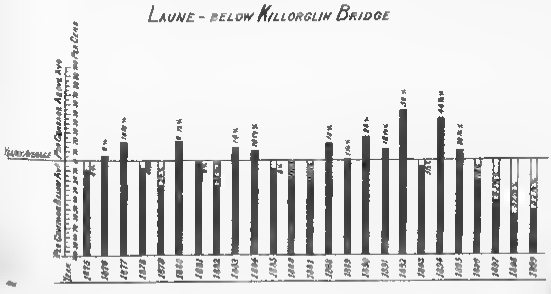
WATERVILLE WEIR CURRANE RIVER C° KERRY



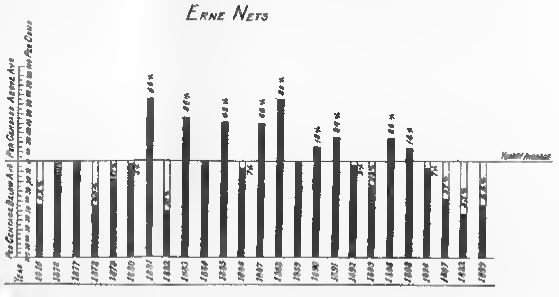
FOYLE NETS



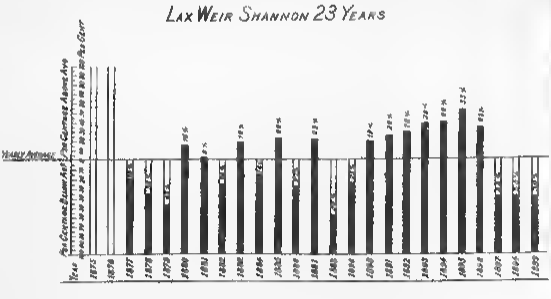
LAUNE – BELOW KILLORGLIN BRIDGE



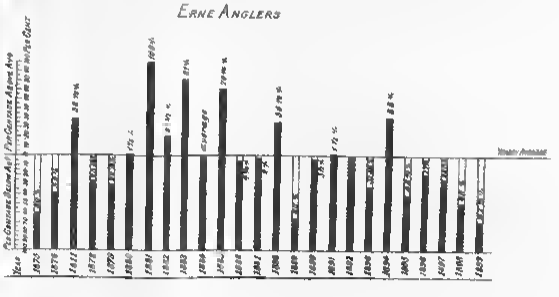
ERNE NETS



LAX WEIR SHANNON 23 YEARS



ERNE ANGLERS



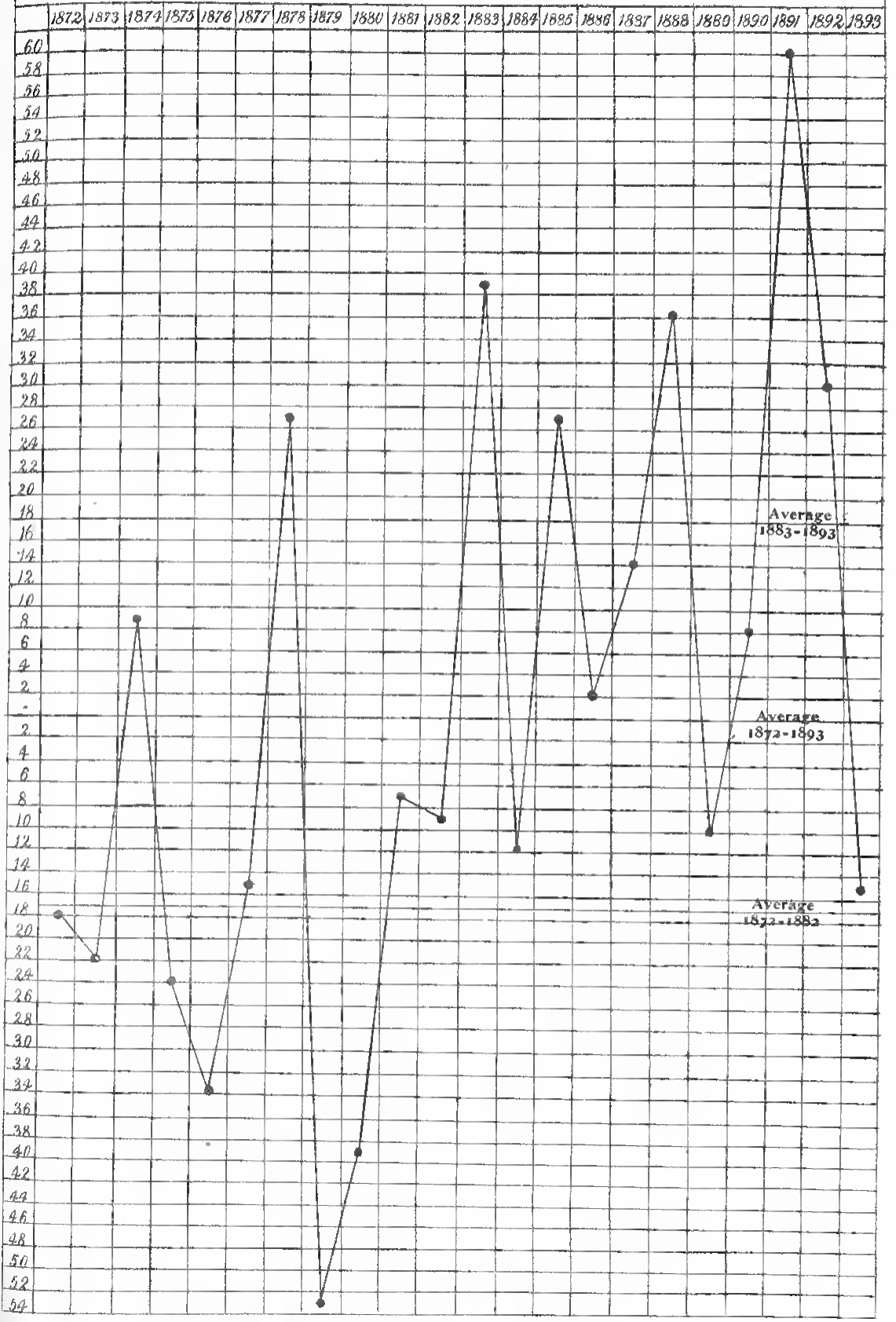
SEAT MEL. PERRY

Documents put in by Mr E L W HOLT Marine Naturalist to the Royal Dublin Society

(2)

(See the Evidence of Mr HOLT, q. q. 6022-6023).

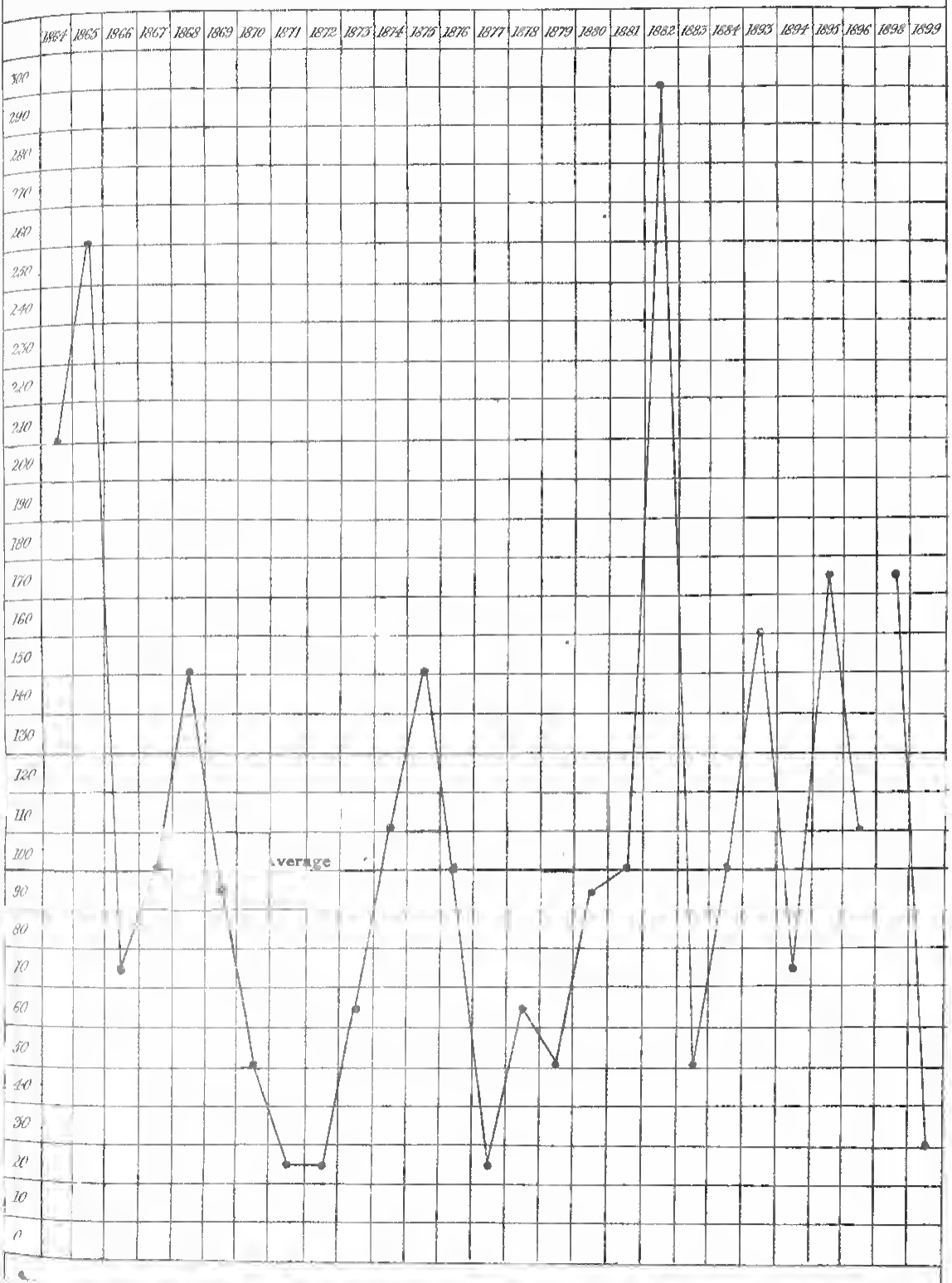
Salmon caught by the Aberdeen Harbour Commissioners' Fishery from 1872 to 1893 inclusive. Arranged in thousands above and below the average annual yield of the whole period.



Inver.

White Trout.

Ratios to an average for 1864 to 1884 in hundreds of Fish. From figures for 1864-1884 taken from the evidence of Mr. W. Sinclair. Irish Salmon Fisheries Commission, 1884, for 1893-1899 supplied by Mr W. H. M. Sinclair.



1865-1874. Mr. W. Sinclair considered that his Fishery benefited by the removal of fixed Engines.

1875-1884. Mr. W. Sinclair considered that his Fishery suffered from the use of half-tram nets in the neighbouring sea.

The above remarks were probably meant to apply more particularly to Salmon.

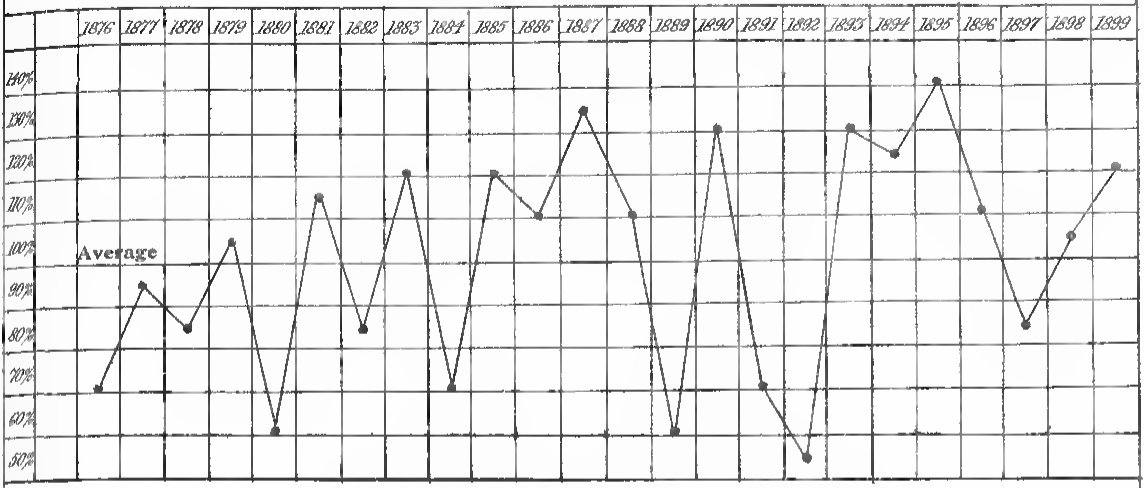
White Trout Statistics.

Tweed.

(See the Evidence of Mr. HOLT, q. 5950).

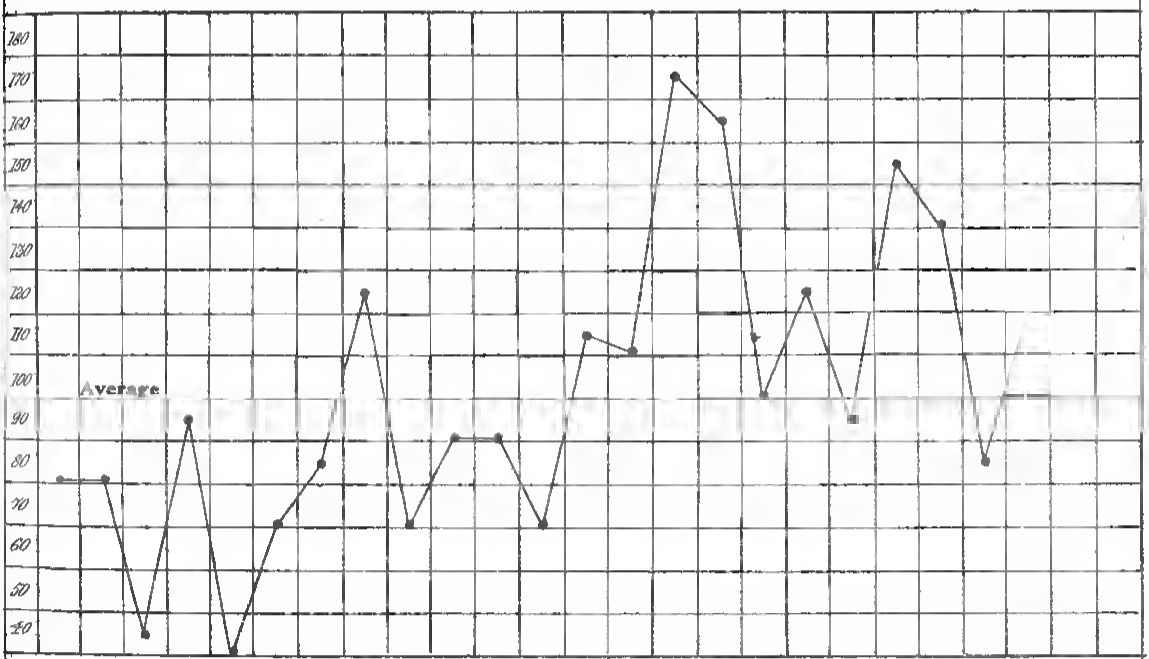
Ratios to an average of nearest Thousand Fish.

Numbers supplied by the Berwick Fishery Co.



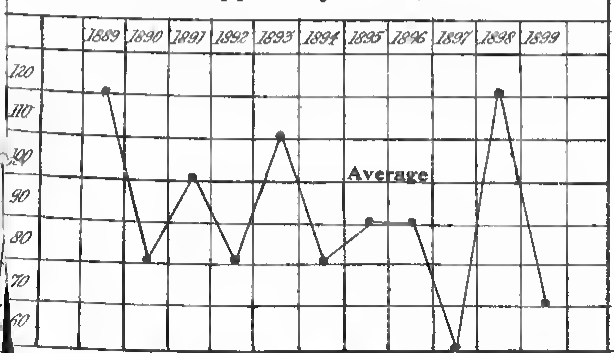
Foyle.

From Percentages supplied by Mr. MacDermott.



Erne.

Ratios to an average of hundreds of Fish from figures supplied by Mr. R. L. Moore.

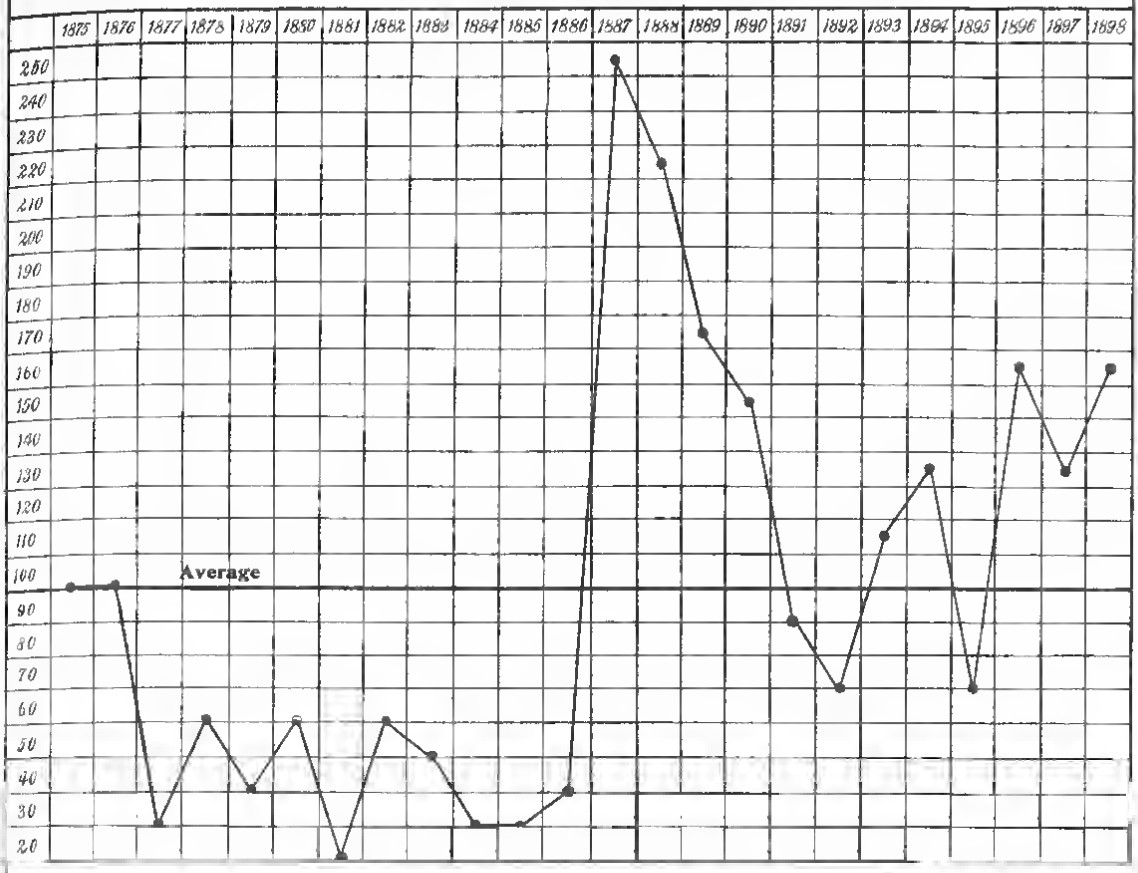


Average weight in different years.

		lbs.
1889	,,	1·01
1890	,,	1·03
1891	,,	1·84
1892	,,	1·00
1893	,,	1·04
1894	,,	1·01
1895	,,	0·93
1896	,,	1·00
1897	,,	0·88
1898	,,	0·94
1899	,,	1·07

White Trout.

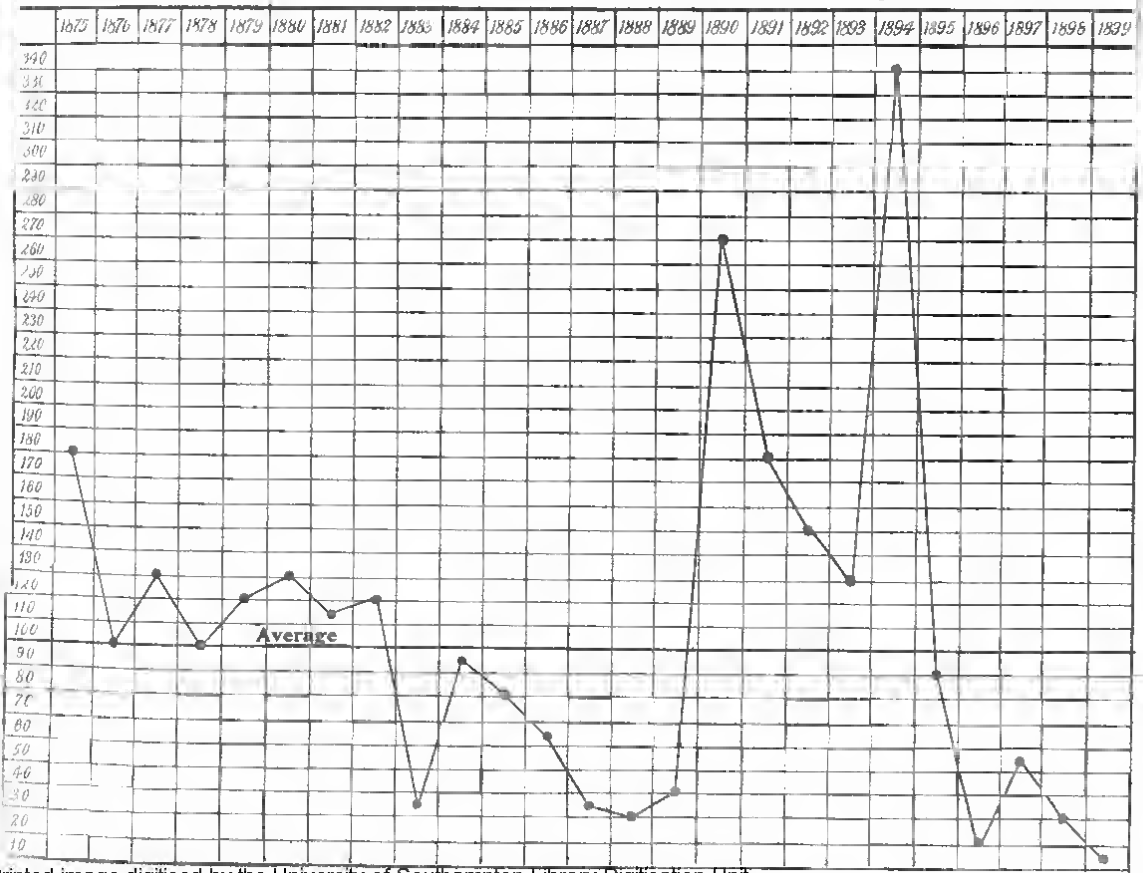
Bann. **From percentages supplied by Mr. MacDermott.**



Waterville Weir.

White Trout.

Ratios to an average of hundreds of Fish. From figures supplied by Mr. J. E. Butler.



(4.)—FOOD OF WHITE TROUT IN THE SEA.

(See the Evidence of Mr. Holt, qq. 10916–10918).

Index Number.	Date.	FISH.					CRUSTACEANS.					Other Invertebrates.
		Undetermined.	Various.	Herrings, etc.	Sandeels.	Larval, other than Herrings, etc., & Sandeels.	Small Undetermined.	Schizopods.	Amphipods.	Larval crabs.	Various.	
	1899.											
4	13.v	Back-bone							×			
5	,,				×							
6	15.v				×							
7	30.v	×										
8	,,	×										
13	,,				×							
12	31v.			× ?	or × ?							
15	10.vi				×							
63	12 *ca.* vi				×							
17	12.vi				×							
19	,,	×										
18	,,	×										
20	,,			×	×							
23	,,				×							
24	,,				×							
25	,,			×								
27	,,	×										
28	13.vi			×	×							
29	,,			×	×							
30	,,	× ?			×							
32	17.vi				×							
33	,,			×	×	Rockling						
34	,,	×										
35	,,					Rockling						
36	,,	×										
37	,,	×										
38	,,				×							
39	19.vi			×								
40	23.vi			×								
	1900.											
67	19.iii		"Green-bone"									
68	,,		Sand-smelt									
69	5 iv		,,									Philine
70	14.v						×				Idotea	

FOOD OF WHITE TROUT IN THE SEA—*continued.*

Index Number.	Date.	FISH.					CRUSTACEANS.					Other Invertebrates
		Undetermined.	Various.	Herrings, etc.	Sandeels.	Larval other than Herrings, etc., & Sandeels.	Small Undetermined.	Schizopods	Amphipods.	Larval crabs	Various.	
	1900.											
71	15.v			×								
74	16.v	Bone								×		
75	,,			×		Cobbler			×			
79	,,						×					
80	,,									×		
81	,,						×			×		
82	17.v			× ?	or × ?	,,		×	×	×		
83	,,					×		×		×		
84	,,			×								
87	,,	×						×		×		
88	,,			×								
89	,,						×					
90	,,			×								
91	,,				×	Cobbler		×		×		
92	,,					,,		×	×	×		
94	19.v										Idotea	
95	,,			×	×			×				
97	,,			×	×							
98	,,				×							
99	,,			×	×	,,						
102	,,			×	×							
103	22.v					,,		×	×	×		
104	,,				×	,,		×	×	×		
105	,,							×		×		
106	,,				×			×	×	×		
107	23.v				×				×	×		
108	,,			×								
109	,,								×	×		
110	,,						×					
111	,,				×				×	×		
112	,,					× ?		×	×	×	Idotea	
113	,,				×				×	×		
114	,,				×				×	×	,,	
115	,,				×			×	×			
116	,,				×				×	×		

FOOD OF WHITE TROUT IN THE SEA—*continued.*

Index Number.	Date.	FISH.					CRUSTACEANS					Other Invertebrates.
		Undetermined	Various.	Herrings, etc	Sandeels.	Larval other than Herrings, etc, & Sandeels.	Small, Undetermined	Schizopods.	Amphipods.	Larval Crabs.	Various.	
	1900.											
117	25.v			×	×							
118	„				×?			×	×			
119	„				×		×					
121	29.v			×	×							
122	„					Cod tribe		×	×	×		
124	30.v				×							
126	„							×				
127	„	Back-bone										
128	„				×							
129	„				×							
131	„	Back-bone										
134	„				×							
135	„									×		
136	„				×							
138	„						×					
141	„							×?				
142	„	×								×		
147	1.vi			×								
148	„	Back-bone										
149	2.vi					×			×	×		
150	„								×			
151	„	Bones										
152	„			×								
153	„								×	×	×	
154	2.vi								×	×	×	
155	„				×?							
157	„				×							
158	5.vi								×			
160	11.vi				×				×			
162	„				×							
163	„	Bones										
164	„				×							
165	„				×							
167	„				×				×		×	Larval Lobster Idotea
168	„				×							

FOOD OF WHITE TROUT IN THE SEA—*continued.*

Index Number	Date.	FISH.					CRUSTACEANS.					Other Invertebrates
		Undetermined.	Various.	Herrings, etc.	Sandeels	Larval, other than Herrings, etc., & Sandeels.	Small Undetermined.	Schizopods.	Amphipods.	Larval Crabs.	Various.	
	1900.											
169	11vi			×								
191	„			×								
170	12.vi			×								
172	„			×								
175	16.vi			×								
176	„							×				
179	„				×							
178	„				×							
181	„				×							
182	„				×							
183	„				×							
184	„				×							
185	„	×										
186	18.vi			×?	or ×?	Gurnard						
187	„				×			×				
188	„	×										
189	„				×							
196	20.vi									×	Larval Lobster	
192	„			×								
193	„			×								
194	„				×							
197	28.vi			×?	×							
198	„			×?	×							
199	„						×					
201	„	×										
205	„			×	×							
206	12.vii				×							
207	„			×	×							
208	„			×	×							
209	„			×	×							
210	13.vii			×	×							
211	„			×								
212	18.vii			×								
213	19.vii			×	×							

(5.)

(See the Evidence of Mr. Holt, qq. 10914–10916.)

COMPARATIVE WEIGHTS OF WHITE TROUT CAUGHT AT SEA IN 1899 AND 1900.

Note.—Every Fish examined is indexed in the books of the Marine Laboratory under a particular number, which is given in these tables in case further details should be required.

May 30th to 5th June.

FEMALES.

Date.	Index Number.	Length Cm.	Weight Grammes	Date.	Index Number.	Length. Cm.	Weight. Grammes.	—
1899.				1900.				
—	—	—	—	30–5,	130	32·3	340	
—	—	—	—	2–6,	152	33·7	411	
—	—	—	—	30–5,	128	34·2	393	
—	—	—	—	30–5,	140	35 0	417	
—	—	—	—	5–6,	158	35 0	444	
—	—	—	—	30–5,	139	35·1	432	
—	—	—	—	30–5,	132	35·3	409	
—	—	—	—	30–5,	142	35·7	419	
—	—	—	—	30–5,	135	35·8	445	
—	—	—	—	30–5,	129	36·5	493	
—	—	—	—	30–5,	131	36·6	438	
—	—	—	—	2–6,	149	37·0	497	
30–5,	12	38·5	647	30–5,	123	38·1	534	
—	—	—	—	2–6,	153	38·8	585	
—	—	—	—	31–5,	145	39·3	536	
—	—	—	—	30–5,	127	40·3	641	
—	—	—	—	1–6,	148	40·4	484	
30–5	7	41·3	710	30–5,	134	41·1	671	
—	—	—	—	2–6,	154	42·0	629	
—	—	—	—	30–5,	125	43·0	722	
—	—	—	—	2–6,	151	43·1	808	
—	—	—	—	30–5,	124	43·6	733	
—	—	—	—	2–6,	155	44·6	764	

MALES.

Date.	Index Number.	Length Cm.	Weight. Grammes.	Date.	Index Number.	Length. Cm.	Weight. Grammes.	—
1899.				1900.				
—	—	—	—	2–6,	150	33·4	444	
—	—	—	—	30–5,	137	35·0	384	
—	—	—	—	30–5,	133	35·3	409	
—	—	—	—	30–5,	141	36·6	452	
—	—	—	—	30–5,	136	37·5	509	
—	—	—	—	2–6,	157	39·4	557	
—	—	—	—	30–5,	126	40·7	636	
—	—	—	—	1–6,	147	41·0	522	
30–5,	8	43·2	896	2–6,	156	43·2	662	
—	—	—	—	30–5,	138	45·7	688	
—	—	—	—	31–5,	144	64·5	2,696	Sex not verified.

COMPARATIVE WEIGHTS OF WHITE TROUT CAUGHT AT SEA IN 1899 AND 1900.

JUNE 6TH TO JUNE 18TH.

FEMALES.

Date.	Index Number.	Length Cm.	Weight Grammes.	Date.	Index Number.	Length Cm.	Weight Grammes.
1899.				1900.			
	–	–	–	16–6, .	185	33·9	415
12–6, .	27	*34·3	490	11–6, .	191	34·3	485
12–6, .	33	34·6	540	16–6, .	182	34·5	438
12–6, .	26	*35·0	533	16–6, .	184	35·0	543
12–6, .	20	35·0	569	11–6, .	167	35·4	438
–	–	–	–	16–6, .	174	35·5	475
12–6, .	24	*37·1	640	12–6, .	171	36·1	446
12–6,	25	*37·1	611	16–6, .	179	37·1	587
13–6, .	28	38·1	683	9–6, .	159	38·0	476
–	–	–	–	18–6, .	186	38·5	628
17–6, .	39	38·6	654	16–6, .	176	38·7	599
–	–	–	–	16–6, .	175	39·4	729
17–6, .	36	40·0	811	16–6, .	177	40 0	711
12–6, .	17	40·3	811	11–6, .	165	40·7	587
–	–	–	–	11–6, .	168	40·8	702
13–6, .	29	41·0	796	11–6, .	166	41·0	752
13–6, .	30	41·3	1,292	18–6, .	189	41·5	684
17–6, .	34	42·2	922	11–6, .	163	43 0	745
–	–	–	–	11–6, .	160	43 3	738
–	–	–	–	11–6, .	169	44·2	824
17–6, .	32	48·5	1,320	18–6, .	187	46·8	914
–	–	–	–	16–6, .	178	63 1	2,000

MALES.

Date.	Index Number.	Length Cm	Weight Grammes.	Date.	Index Number	Length Cm.	Weight Grammes
1899.				1900.			
17–6. .	35	36 8	640	12–6, .	172	34·5	419
–	–	–	–	16–6, .	180	36·5	507
17–6, .	38	38 6	683	16–6, .	183	38·2	581
12–6, .	23	*38 6	675	11–6, .	164	39·0	685
–	–	–	–	18–6, .	188	40·1	686
12–6, .	19	41 9	781	16–6, .	181	41·7	709
17–6, .	37	42·5	824	11–6, .	161	45·8	785
10 (?)–6, .	15	43·5	936	12–6, .	170	49·1	1,130
12–6, .	18	43·5	867	11–6, .	162	50 3	1,108

* Computed from total length.

(6.)

INISBOFIN MACKEREL FISHERY, 1900.

(See Mr. HOLT'S Evidence, qq. 10901–10913.)

NUMBER of TROUT and SALMON observed from 14th to 29th MAY, inclusive.

Where the column succeeding the date is left blank it may be taken that 6,000 yards of net, more or less, were fished. The "Monica" and "St. Peter" fish between them 4,200 yards of net in addition to the above, but usually work far outside the grounds frequented by the smaller boats

Date.	Remarks.	No.	Species.	Notes.
14–5–1900,		1	Trout.	
15–5–1900,		3	do.	
16–5–1900,		5	do.,	"St. Peter" nobby.
Do.,		8	do.	
17–5–1900,		14	do.	
18–5–1900,				
19–5–1900,		11	do.	
20–5–1900,	Sunday.			
21–5–1900,	Stormy, no fishing.			
22–5–1900,	Stormy, little fishing,	5	do.	
23–5–1900,		2	do.,	"Monica" nobby.
Do.,		8	do.	
24–5–1900,	Holiday.			
25–5–1900,		3	do.	
26–5–1900,		1	do.	
27–5–1900,	Sunday.			
28–5–1900,	Little fishing.			
29–5–1900,		3	do.	
	Total number recorded,	64	Trout.	

INISBOFIN MACKEREL FISHERY, 1900.

NUMBER of WHITE TROUT and SALMON observed from 30th MAY to end of SPRING FISHING.

Date.	Remarks.	No	Species.	Notes.
30–5–1900,		20	Trout.	
31–5–1900,		1	do.	
Do.,		1	Salmon,	"Monica" nobby.
1–6–1900,		2	Trout.	
2–6–1900,		9	do.	
3–6–1900,	Sunday.			
4–6–1900,	Whit Monday.			
5–6–1900,		1	do.	
6–6–1900,	Fish not collected. Several known to have been caught.			
7–6–1900,				
8–6–1900,				
9–6–1900,				
10–6–1900,	Sunday.			
11–6–1900,		11	do.	
12–6–1900,	Little fishing.			
13–6–1900,	do.			
14–6–1900,	do.			
15–6–1900,	do.			
16–6–1900,		12	do.	
17–6–1900,	Sunday.			
18–6–1900,		3	do.	
Do.,		1	Salmon. ?	
19–6–1900,		5	Trout.	
20–6–1900,				
	Total number recorded,	65	Trout.	
		2 ?	Salmon.	

(7.)—From Mr W. E. Archer's Natural History Notes on Salmon in Norway.

(See the Evidence of Mr. Holt, q. 6022.)

(Eleventh Annual Report, F. B., Scotland).

RETURN OF WEIGHT OF SALMON KILLED DURING TWELVE YEARS.

Year	Sand's River			District of Ryfylke					Remarks.
	Mean Height of Sand's River during Fishing Season	Yield of Sand's River	Average of 4 years	Yield of Bag Nets.	Average of 4 years.	Number of Bag Nets.	Average yield per net.	Average yield per net 4 years	
	F. In.	Lbs.	Lbs.	Lbs.	Lbs.				
1880	–	3,410	5,787	20,620	20,917	97	212	253	Fixed engines in river and sea fishing 6 days a week.
1881	–	6,402		28,010		85	329		
1882	–	6,635		13,103		72	182		Fixed engines in river and sea fishing 4 days a week.
1883	–	6,701		21,934		76	288		
1884	–	3,212	4,871	23,729	36,860	82	289	336	
1885	5 10	6,170		48,859		107	455		
1886	7 7	4,478		39,371		108	364		
1887	6 1	5,626		35,483		149	238		Angling in river. Bag nets in sea fishing 4 days a week.
1888	5 0	4,231	4,110	52,353	57,618	180	290	309	
1889	3 9	2,697		48,336		172	281		
1890	6 1	3,638		35,492		165	215		
1891	7 4	5,873		94,292		209	451		
1892	–	3,146	–	80,964	–	229	354	–	
1893	–	3,778	–	60,909	–	279	218	–	

Further Explanatory Remarks.

Yield of river.—Previous to 1884, 80 per cent. of fish caught in nets below the first fall or in engines fixed at the fall, which was rendered practically impassable except in certain levels of the water. The increased close time in 1882 applied only to fixed engines and not to nets.

In 1884 nets and engines were taken off, and only angling permitted in fresh water. In 1885 the lower fall, and in 1886 the upper fall, were rendered more accessible.

In 1886 and succeeding years about 200,000 ova were laid down on an artificial redd.

In 1888 fry were first turned down from a small hatchery at Sand.

In 1889 the river was low and the weather very hot and dry. No angling was carried on during the last five weeks of the season.

In 1894 the river yielded, by angling alone, a greater catch than was obtained when nets and fixed engines were in use (W. E. A. in evidence at Tweed Commission).

XXV.

Document put in by Mr. S. C. Vansittart, J.P.

(See the Evidence of Mr. Vansittart, qq. 7105–7110, and qq. 7143–7156.)

CASTLECONNELL FISHERY.

Record of Salmon and Peal killed at Castleconnell (taken from the Fishery Books of the various fisheries).

Doonass.

Date.	Fishery.	No. of Spring Salmon up to May 31st.	No. of Peal and Autumn Salmon from June 1st.	Total.
1863, . .	(Before Bill of '63),	176 fish for the season.	Old records.	
1865, . .	(Till end of August),	425 fish,		
1866, . .	(For whole season),	671 fish,		
1877, . .	do. .	No record,	June only, 149	
1878, . .	do. .	do.	June only, 107	
1879, . .	do. .	do.	June only, 102	
1880, . .	do. .	do.	June, 94 fish; July 1st to 14th, 92.	
1881, . .	do. .	do.	July only, 127	
1884, . .	do .	113	No record	
1888, . .	do. .	No record,	July (12 days only), 106	
1889, . .	do. .	38	No record	
1890, . .	do. .	36	do.	
1891, . .	do. .	35	do.	
1892, . .	do. .	35	do.	
1893, . .	do. .	28	do	
1894, .	do. .	84	do.	
1895, . .	do. .	33	do.	
1896, . .	do. .	55	do.	
1897, . .	do. .	34	do.	
1898, . .	do. .	47	June 1st to July 31st, 51	
1899, . .	do. .	19	June 1st to July 14th, 37	

Hermitage.

1884, . .	Hermitage,	104	No record,	–
1889, . .	do. .	37	64	101
1890, . .	do. .	46	75	121
1891, . .	do. .	30	125	155
1892, . .	do .	44	103	147
1893, . .	do. .	19	71	90

HERMITAGE—*continued.*

Date.	Fishery.	No. of Spring Salmon up to May 31st.	No. of Peal and Autumn Salmon from June 1st.	Total.
1894, . .	No record, .	49	107	156
1895, . .	do. .	29	47	76
1896, . .	do. .	32	55	87
1897, . .	do. .	28	57	85
1898, . .	do. .	23	30	53
1899, . .	do. .	16	21	37

WORLDSEND.

1893, . .	Worldsend (4 days a week).	13	29	42
1894, . .	(5 days a week),	20	55	75
1895, . .	(Whole week),	20	16	36
1896, . .	do. .	12	19	31
1897, . .	do. .	19	21	40
1898, . .	do. .	10	12	22
1899, . .	do. .	6	15	21

WOODLANDS.

1885, . .	Woodlands, .	33	55	88
1886, . .	do. .	32	47	79
1887, . .	(Part of year not fished.)	9	9	18
1890, . .	do. .	25	20	45
1891, . .	do. .	16	No record	–
1893, . .	do. .	16	47	63
1894, . .	do. .	21	59	80
1895, . .	do. .	21	42	63
1896, . .	do. .	31	37	68
1897, . .	do .	18	23	41
1898, . .	do. .	15	36	51
1899, . .	do. .	8	23	31

NEWGARDEN.

1889, . .	Newgarden, .	32	No record	–
1890, . .	do. .	25	do.	–
1891, . .	do. .	24	164	188

NEWGARDEN—*continued.*

Date.	Fishery.	No. of Spring Salmon up to May 31st.	No. of Peal and Autumn Salmon from June 1st.	Total.
1892, . .	Newgarden, .	34	114	148
1893, . .	do. .	29	48 to Aug. 26th	–
1894, . .	do. .	37	101	138
1895, . .	do. .	33	16	49
1896, . .	do. .	40	22	62
1898, . .	do. .	30	36	66
1899, . .	do. .	12	48	60

PROSPECT.

1896, . .	Prospect, .	15	34	49
1897, . .	do. .	12	49	61
1898, . .	do. .	12	30 (Peal list incomplete)	42
1899, . .	do. .	8	31	39

SUMMER HILL and CASTLE.

1889, . .	Summer Hill & Castle,	24	43	67
1890, . .	do. .	27	53	80
1891, . .	do. .	19	45	64
1892, . .	do. .	22	138	160
1893, . .	do. .	18	44	62
1894, . .	do. .	35	47	82
1895, .	do. .	33	19	52
1896, . .	do. .	39	29	68
1897, . .	do. .	21	33	54
1898, . .	do.	34	34	68
1899, . .	do. .	16	12	28

NOTE.—Total of Spring Salmon killed on all the Castleconnell fisheries from February 1st to May 31st, 1899, was 84.

Total Spring Salmon killed on all Castleconnell waters from February 1st to April 20th:—

Year 1899, . . . 43
Year 1900, . . . 45

XXVI.

Document put in by Mr. Wilson.

THE MOY FISHERY CO. *ONLY.*

Return of Salmon taken in Moy from 1882 to 1893, inclusive.

Year.	Tidal.	Weirs.	Upper Waters (*by Moy Fishery only*).
1882, ...	11,264	2,026	4,495
1883, ...	33,837	2,814	3,284
1884, ...	28,640	1,359	1,425
1885, ...	46,446	1,344	375
1886, ...	26,118	1,369	1,108
1887, ...	35,853	823	122
1888, . . .	23,789	2,599	2,848
1889, ...	30,911	1,153	837
1890, ...	41,540	1,511	899
1891, ...	48,358	1,340	359
1892, ...	34,225	1,978	2,216
1893, ...	29,678	411	51
Total, . .	390,659	18,727	18,019
Average for 12 years.	32,554	1,560	1,501

XXVII.

Documents put in by Miss Little.

(1).—(See the Evidence of Miss Little, q. 9551.)

MOY.

Return of Catch on Riparian Netting, Mullaun Moy Fishery, own property. Capt. Jackson's and Mr. Verschoyle's.

Year.	Catch of Salmon.	Year.	Catch of Salmon.	Year.	Catch of Salmon.
1867, . .	940	1873, . .	3,440	1879, . .	5,178
1868, . .	1,154	1874, . .	1,685	1880, . .	6,422
1869, .	2,590	1875, . .	4,197	1881, . .	5,162
1870, . .	4,433	1876, . .	1,921	1882, . .	4,495
1871, . .	5,764	1877, . .	4,569	1883, . .	3,284
1872, . .	5,197	1878, . .	5,703	1884, . .	1,425

Average catch for the period 1867–1884, ... 3752.

Return of Catch on Riparian Netting, Mullaun Moy Fishery. Capt. Jackson's and Mr. Orme's.

Year.	Catch of Salmon.	Year.	Catch of Salmon.	Year.	Catch of Salmon.
1885, . .	375	1891, .	359	1897, . .	1,151
1886, . .	1,108	1892, .	2,216	1898, . .	461
1887, . .	122	1893, .	51	1899, . .	571
1888, . .	2,848	1894, .	2,427		
1889, . .	837	1895, .	378	Clongee.	
1890, . .	899	1896, .	221	1898, . .	186
				1899, . .	183

Average catch for period 1885–1896, ... 987.

(2).—(See the Evidence of Miss LITTLE, qq. 9548–9551.)

MOY.

Catch of Salmon by Messrs. Little & Co. in their several fishery in the tidal waters of the River Moy by weirs and nets from 1835 to 1864 :—

In 1842—Weekly close time was increased to 36 hours.
In 1846—Ancient still not was removed.
In 1864—Gap made in weirs; weekly close time increased to 48 hours.

	Total Number	Average
6 years ending 1840, .	272,338	45,389
„ „ „ 1846, .	288,448	48,074
„ „ „ 1852, .	155,096	25,849
„ „ „ 1858, .	301,524	50,254
„ „ „ 1864, .	233,574	38,929
	1,250,980	—
Average of the 30 years, .	—	41,699

1865, ...	53,972
1866, ...	35,044
	89,016

Catch of Salmon by Messrs. Little & Co. in same fishery with weirs and nets from 1867 to 1896 :—

In 1867—Netting was begun in the non-tidal or Riparian fisheries of the Moy.

	Total Number.	Average.
6 years ending 1872, .	211,798	35,298
„ „ „ 1878, .	215,630	35,938
„ „ „ 1884, .	148,659	24,776
„ „ „ 1890, .	213,456	35,576
„ „ „ 1896, .	217,814	36,302
	1,007,357	33,578
Average of the 30 years, .	—	33,578

From 1897 to 1899, . . .	52,683
Average catch for 33 years ending 1899, ...	32,122
Average catch for 35 years ending 1899, ...	32,830

(3).—(See the Evidence of Miss LITTLE, q. 9551.)

Account showing receipts for Sale of Fish from Ballina Fishery, 1832.

313

JOURNAL, COLERAINE, 1832. *Cr.*

156 / 19 — William Crocket, Ballina. *Dr.* — Ballina Fishery.

			cwt.	qrs	lb		£	s.	d.
	For amount received for Sale of Eels, per account, ...						20	0	0
	Also for Sale of Salmon this year at Ballina, as under, viz. :—								
29 February, . .	24 Fish, weight	1	2	11	at 10*d.* per lb., . . .		7	19	2
16 March, . .	36 „ „	2	2	13	„ 10*d.* „ . . .		13	0	10
24 „ . .	33 „ „	2	1	17	„ 10*d.* „ . . .		11	9	2
31 „ . .	59 „ „	4	0	19	„ 10*d.* „ . . .		20	15	10
7 April, . .	78 „ „	5	2	9	„ 10*d.* „ . . .		27	17	6
13 „ . .	58 „ „	3	3	3	„ 10*d.* „ . . .		18	17	6
20 „ . .	78 „ „	5	0	8	„ 10*d.* „ . . .		25	6	8
25 „ . .	35 „ „	2	1	15	„ 10*d.* „ . . .		11	17	6
4 May, . .	35 „ „	2	2	9	„ 10*d.* „ . . .		12	17	6
15 „ . .	34 „ „	2	0	8	„ 10*d.* „ . . .		10	6	8
18 „ . .	40 „ „	2	0	23	„ 10*d.* „ . . .		10	19	2
	510	34	1	15			171	7	6
1 June, . .	43 Fish, weight	2	0	18	at 8*d.* per lb., . . .		8	1	2
4 „ . .	16 „ „	0	3	6	„ 8*d.* „ . . .		2	8	0
	569	37	1	9			181	16	8
12 August, .	2,073 Fish, weight	91	2	11	sold at Hill net, per Book, .		141	15	6
	2,642 Fish, weight	128	3	20			323	12	2

314

JOURNAL, COLERAINE, 1832. *Cr.*

19 / 156 — Ballina Fishery. *Dr.* — William Crocket, Ballina.

	£	s.	d.		£	s.	d.
For amount paid Sundry Incidental Expense on the Fishery Accounts, per Book,	7	16	8				
„ „ „ „ paid January,	10	12	4				
„ „ „ „ 29 January, .	3	11	6				
„ „ „ „ 28 March, .	4	3	0				
„ „ „ „ 28 April,	1	13	6				
„ „ „ „ 21 May, .	1	17	6				
„ „ „ „ 18 June, .	2	1	9				
„ „ „ „ 20 June, .	3	5	0				
„ „ „ „ 23 July, .	2	16	4				
„ „ „ „ 6 August, .	2	9	6				
„ „ „ „ 29 October, .	3	18	4				
„ „ „ „ 20 November,	1	18	2				
„ „ „ „ December,	1	16	11				
					48	0	6
For amount paid the Clerk of the Petty Sessions at Swinford for Summons, Convictions, and Warrants, &c. 12 August, ...					9	14	0

XXVIII.

Document put in by Mr. R. St. G. Robinson.

(See the Evidence of Mr. Robinson, qq. 9706–9718, 9733–37.)

SLIGO FISHERY.

Table showing the Number of Fish taken in the Nets in Sligo River from 1861 to 1896, both inclusive.

—		January.	February.	March.	April.	May.	June.	July.	August.	Total.
1861,	Salmon,	–	57	54	131	221	34	8	–	505
	Grilse,	–	–	–	–	106	866	351	2	1,325
1862,	Salmon,	–	437	325	530	223	49	11	3	1,578
	Grilse,	–	–	–	–	9	334	209	3	555
1863,	Salmon,	–	249	325	223	151	46	28	14	1,036
	Grilse,	–	–	–	–	4	614	640	64	1,322
1864,	Salmon,	–	1,350	835	426	197	28	18	9	2,863
	Grilse,	–	–	–	1	38	963	502	85	1,589
1865,	Salmon,	–	365	111	208	320	52	11	–	1,067
	Grilse,	–	–	–	–	19	751	733	35	1,538
1866,	Salmon,	–	335	405	605	255	9	10	–	1,619
	Grilse,	–	–	–	–	24	592	296	18	930
1867,	Salmon,	–	188	127	71	17	18	7	–	428
	Grilse,	–	–	–	–	1	333	201	1	536
1868,	Salmon,	262	181	131	158	88	26	41	–	887
	Grilse,	–	–	–	–	1	162	144	–	307
1869,	Salmon,	108	83	49	131	71	76	113	–	631
	Grilse,	–	–	–	–	–	295	292	–	587
1870,	Salmon,	151	562	345	217	127	38	24	–	1,464
	Grilse,	–	–	–	–	4	429	245	–	678
1871,	Salmon,	294	301	357	181	90	42	10	–	1,464
	Grilse,	–	–	–	–	176	776	83	–	678
1872,	Salmon,	188	68	171	421	220	23	22	–	1,113
	Grilse,	–	–	–	–	101	209	88	–	378

TABLE showing the Number of FISH taken in the NETS in SLIGO RIVER from 1861 to 1896, both inclusive—*continued.*

—		January.	February.	March.	April	May	June	July	August	Total.
1873,	Salmon,	176	236	435	139	110	68	13	–	1,177
	Grilse,	–	–	–	–	24	1,039	197	–	1,260
1874,	Salmon,	459	300	310	279	77	28	8	–	1,461
	Grilse,	–	–	–	–	1	149	36	–	186
1875,	Salmon,	232	37	157	196	90	14	15	–	741
	Grilse,	–	–	–	–	6	164	92	–	262
1876,	Salmon,	352	119	129	260	187	64	4	–	1,115
	Grilse,	–	–	–	–	55	527	59	–	641
1877,	Salmon,	99	147	242	213	269	60	19	–	1,049
	Grilse,	–	–	–	–	31	368	131	–	530
1878,	Salmon,	274	352	250	117	81	74	7	–	1,155
	Grilse,	–	–	–	–	24	281	68	–	373
1879,	Salmon,	91	145	109	139	73	12	2	–	571
	Grilse,	–	–	–	2	53	60	10	–	125
1880,	Salmon,	25	27	115	31	33	5	11	–	247
	Grilse,	–	–	–	–	–	61	81	–	142
1881,	Salmon,	156	120	127	93	48	26	–	–	570
	Grilse,	–	–	–	–	–	137	115	–	252
1882,	Salmon,	165	117	102	53	7	5	1	–	450
	Grilse,	–	–	–	1	66	67	36	–	170
1883,	Salmon,	276	178	193	147	12	6	3	–	815
	Grilse,	–	–	–	–	174	605	160	–	939
1884,	Salmon,	287	208	215	166	60	6	7	–	949
	Grilse,	–	–	–	–	16	369	213	–	598
1885,	Salmon,	224	196	151	133	72	10	15	–	801
	Grilse,	–	–	–	–	47	867	253	–	1,167

TABLE showing the Number of FISH taken in the NETS in SLIGO RIVER from 1861 to 1896, both inclusive—*continued.*

—		January.	February.	March	April.	May.	June.	July.	August.	Total.
1886,	Salmon,	173	188	489	245	80	15	–	–	1,190
	Grilse,	–	–	–	–	23	433	99	–	555
1887,	Salmon,	470	202	315	203	86	17	1	–	1,294
	Grilse,	–	–	–	–	17	310	115	–	442
1888,	Salmon,	517	305	228	278	131	14	3	–	1,476
	Grilse,	–	–	–	3	127	292	85	–	507
1889,	Salmon,	338	274	299	191	105	17	7	–	1,231
	Grilse,	–	–	–	17	42	275	61	–	395
1890,	Salmon,	329	372	358	354	191	33	2	–	1,639
	Grilse,	–	–	–	–	–	560	505	–	1,065
1891,	Salmon,	1,109	559	345	275	197	21	4	–	2,510
	Grilse,	–	–	–	2	46	464	220	–	732
1892,	Salmon,	669	433	769	516	183	4	4	–	2,588
	Grilse,	–	–	–	–	13	479	479	–	971
1893,	Salmon,	722	247	309	174	117	10	3	–	1,582
	Grilse,	–	–	–	3	3	216	80	–	299
1894,	Salmon,	247	94	128	166	160	27	–	–	822
	Grilse,	–	–	–	–	40	361	104	–	505
1895,	Salmon,	456	129	198	102	77	7	–	–	969
	Grilse,	–	–	–	–	22	224	107	–	353
1896,	Salmon,	1,310	381	120	110	52	13	1	–	1,987
	Grilse,	–	–	–	–	1	149	93	–	243
1897,	Salmon,	735	170	34	59	60	7	–	–	1,065
	Grilse,	–	–	–	–	8	117	5	–	130
1898,	Salmon,	353	91	32	50	23	5	1	–	555
	Grilse,	–	–	–	–	–	–	..	–	95
1899,	Salmon,	94	43	55	26	25	4	1	–	248
	Grilse,	–	–	–	–	–	–	–	–	204

XXIX.

Document put in by Mr. J. W. Scott.

BALLYSADARE FISHERY.

Return of Fish caught in the Ballysadare Fishery, 1890–1900.

Year.	Number of Fish caught up to May 15.	Total Number caught during the Year.
1890, ...	—	8,294
1891, ...	—	9,554
1892, ...	—	9,928
1893, ...	—	3,839
1894, ...	—	8,431
1895, ...	—	5,376
1896, ...	64	7,741
1897, ...	152	4,884
1898, ...	67	2,942
1899, ...	27	3,064
1900, ...	31	—

XXX.

Document put in by Mr. R. C. Dobbs, J.P.

(See the Evidence of Mr. Dobbs, qq. 7626–7628.)

SHEEN AND ROUGHTY.

Return of Number of Salmon caught by Mr. R. C. Dobbs in a Draft Net at mouths of Sheen River and Roughty River, which run into the head waters of Kenmare Estuary.

N.B.—The fishing only continues through the months of June and July and first week of August

Year.	Number of Fish caught.	Year.	Number of Fish caught.
1894, ...	753	1897, ...	423
1895, ...	638	1898, ...	208
1896, ...	452	1899, ...	338

N.B.—On July 9th, 1897, I removed also from one pool in the Sheen River *110 fish* which had been poisoned.

XXXI.

Document put in by Lieutenant-Colonel Coddington.

(See the Evidence of Lieut.-Colonel Coddington, qq. 2113–2116, 2130.)

BOYNE.

Return of Fish caught in the Old Bridge Fishery, 1874–1899.

Year.	Number of Salmon.	Number of Peal.	Number of Salmon and Peal	Number of White Trout.
1874,	—	—	1,169	356
1875,	—	—	646	922
1876,	—	—	574	657
1877,	—	—	326	254
1878,	—	—	422	710
1879,	—	—	244	96
1880,	—	—	398	1,573
1881,	—	—	685	1,181
1882,	—	—	339	463
1883,	—	—	1,685	1,727
1884,	—	—	1,346	2,531
1885,	—	—	1,469	2,581
1886,	—	—	454	1,749
1887,	—	—	1,410	1,879
1888,	—	—	509	538
1889,	227	225	452	1,251
1890,	380	139	519	1,861
1891,	651	213	864	1,790
1892,	483	50	533	1,131
1893,	340	441	781	2,828
1894,	145	202	347	761
1895,	366	181	547	1,101
1896,	254	169	423	948
1897,	152	139	291	268
1898,	174	171	345	898
1899,	144	163	307	271

APPENDIX TO THE REPORT.—PART II.

SECTION.—D.

MISCELLANEOUS DOCUMENTS.

XXXII.

DOCUMENT put in by Mr. R. L. MOORE, J.P., D.L.

(See the Evidence of Mr. MOORE, qq. 218–223).

(9)—TABLE OF RAINFALL AT UNDERMENTIONED PLACES FROM 1894 to 1898.

—	Year.	Annual.	March to May.
Newtownlimavady,	1894	32·54	5·48
	1895	31·76	4·36
Garvagh (Moneydig),	1896	39·33	8·18
	1897	39·39	8·95
	1898	35·99	9·67
Stewartstown,	1894	35·16	7·19
	1895	32·60	5·82
	1896	36·13	5·88
	1897	39·85	8·93
	1898	37·84	9·07
Omagh (Edenfell),	1894	40·12	8·85
	1895	36·96	6·28
	1896	37·28	7·63
	1897	46·31	11·09
	1898	40·38	8·60

XXXIII.

Documents put in by Mr. E. L. W. Holt, Marine Naturalist to the Royal Dublin Society.

(See the Evidence of Mr. Holt, qq. 5940–5941).

(8.)- Table of Marked Fish, compiled from various sources, showing apparently possible variations in the rate of Growth. Horizontal lines refer to individual fish or, when so stated, averages of a number of fish. Observed weights are shown in lbs in ordinary figures, estimated weights in *italics*. The arrangement in different years, which must be taken for what it may be worth, proceeds on the assumption that all the fish became smolts about two years after hatching.

—	Year of Run of Parents	1st and 2nd Year— Egg and Fry	3rd Year— Fry.	Smolt.	Grilse.	4th Year— Kelt	Clean.	5th Year— Kelt.	Clean.	6th Year— Kelt.	Clean.	7th Year— Kelt.	Clean	8th Year— Kelt	Clean.	9th Year— Kelt.	Clean.	10th Year— Kelt.	Clean.
About 8 per cent. of Fry—Dunbar.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Average of 12 Smolts.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Average of 18 Grilse—Inversbin,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Salmon ♀ Archer. No. 18,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♂ „ „ 56,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 30,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 33,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 16,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 23,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 53,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 13,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 14,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 18,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ ♀ „ „ 20,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hypothetical Clean Winter Fish.	–	–	–	–	–	–	*10*	– in the river	–	– *8* in the sea *15*	–	– in the river	–	– *12* in the sea *20*	–	– in the river	–	– *16*	–
„ „ „ „	–	–	–	–	*5*	– In the river	–	– *4* in sea *10*	–	– in river	–	– *8* in sea *15*	–	– in river	–	– *12* in sea *20*	–	–	–
A Stormontfield Smolt,	–	–	–	*1/16 ca.*	9½	7¾	–	–	–	–	–	–	–	–	–	–	–	–	–
Salmon ♀ Archer, No 30,	–	–	–	–	–	8	–	–	20	–	(*25*?)	–	–	–	–	–	–	–	–
„ ♀ „ „ 20,	–	–	–	–	–	–	–	–	20	–	–	–	31	–	–	–	–	–	–
A Berridale Smolt,	–	–	–	*1/16 ca.*	3½	2¾	–	–	–	–	–	–	–	–	–	–	–	–	–
Salmon ♀ Archer. No 41,	–	–	–	–	–	2¼	–	–	13¾	– *11*	–	–	–	–	–	–	–	–	–
Average of 10 Smolts (2 Berridale, 8 Tweed).	–	–	–	*1/16 ca.*	–	–	5½	– *4*?	–	–	–	–	–	–	–	–	–	–	–
Average of 16 Grilse—Inversbin,	–	–	–	–	–	–	–	4	10½	– *8½*	–	–	–	–	–	–	–	–	–
Salmon ♀ Archer. No 33,	–	–	–	–	–	–	–	–	–	8½	–	–	20	– *16*	–	–	–	–	–
„ ♀ „ „ 53,	–	–	–	–	–	–	–	–	–	–	–	–	–	15½	–	–	–	–	31
A Berridale Smolt.	–	–	–	*1/16 ca.*	–	–	8	– *6¼*	–	–	–	–	–	–	–	–	–	–	–
Salmon ♂ Archer. No 52.	–	–	–	–	–	–	–	6	–	–	20	–	–	–	–	–	–	–	–
„ ♂ „ „ 45.	–	–	–	–	–	–	–	7½	–	– 11	–	–	–	–	–	–	–	–	–
Salmon—Tweed,	–	–	–	–	–	–	–	–	–	9	– 13	–	–	–	–	–	–	–	–
A Tweed Smolt,	–	–	–	*1/16 ca.*	–	–	3½	– *2¾*	–	–	–	–	–	–	–	–	–	–	–
A Tweed Grilse.	–	–	–	–	–	–	–	2	8	– *6¼*	–	–	–	–	–	–	–	–	–
Salmon ♂ Archer. No 52.	–	–	–	–	–	–	–	–	–	6	–	–	20	–	–	–	–	–	–
„ ♀ „ „ 20.	–	–	–	–	–	–	–	–	–	–	–	–	20	–	–	–	–	–	31
„ ♀ „ „ 41.	–	–	–	–	–	–	–	2¼	–	–	13½	– *11*	–	–	–	–	–	–	–
Salmon—Athol,	–	–	–	–	–	–	–	–	–	–	–	11½	– 18	–	–	–	–	–	–
Salmon—Inversbin.	–	–	–	–	–	–	–	–	–	–	–	10	– 21¼	–	–	–	–	–	–
Salmon ♀ Archer. No 13	–	–	–	–	–	–	–	–	–	–	–	11	–	–	25½	– *20*¼	–	–	–
Salmon—Athol.	–	–	–	–	–	–	–	–	–	–	–	10	– 17	–	–	–	–	–	–

(9.)—TABLE showing observed INCREASE of WEIGHT (expressed in percentages of the weight of the Kelt) in a single season.

—	Weight in Lbs as Kelt	Increase from Kelt to Clean.	Increase from Kelt to Kelt.
Invershin grilse kelt,	2	300 per cent.	225 per cent
Tweed grilse kelt,	2	300 „	225 „
Norwegian grilse kelt ♀,	3	92 „	58 „
Norwegian grilse kelt ♀,	3½	77 „	43 „
Average of 16 4 lb. grilse kelts, Invershin,	4	154 „	106 „
Average of a 4 lb. grilse kelt, Invershin—least increase,	4	100 „	62 „
Average of a 4 lb. grilse kelt, Invershin—greatest increase,	4	250 „	180 „
Norwegian kelt ♀,	8	87 „	50 „
Tweed kelt,	9	44 „	17 „
Athol kelt,	10	125 „	70 „
Athol kelt,	10	70 „	35 „
Athol kelt,	11½	57 „	26 „
Norwegian kelt ♀,	12	54 „	25 „
Athol kelt,	12½	52 „	18 „
Norwegian kelt ♀,	13	55 „	31 „
Norwegian kelt ♀,	13	38 „	11 „
Norwegian kelt ♀,	13¼	24 „	0 „
Norwegian kelt ♀,	13¼	58 „	28 „
Norwegian kelt ♀,	14	57 „	44 „
Norwegian kelt ♀,	14¼	44 „	16 „
Norwegian kelt ♀,	15½	32 „	ca. ¾ „
Norwegian kelt ♀,	17	47 „	18 „
Norwegian kelt ♀,	17½	32 „	ca. ½ „
Norwegian kelt ♀,	19	43 „	16 „
Norwegian kelt ♀,	19½	18 „	0 „
Norwegian kelt ♀,	20½	50 „	22 „

(10.)—The apparently possible WEIGHTS (up to 31 lbs.) of CLEAN FISH in ten years after the run of the Parents deduced from the Table of marked Fish.

	Year of Run of Parents	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.	11th year.	12th Year.
8 °/₀ Fry remaining in river one year after hatching,		Egg. Fry,	Smolt & Grilse 3—9½	3½— 10¼	8—20	13—25?	15—31	(20) 24—31	20—31				
60 °/₀ Fry remaining in river two years after hatching,		Egg. Fry,	Fry,	Smolt & Grilse 3—9½	3½—10¼	8—20	13—25?	15—31	(20) 24—31	20—31			
32 °/₀ Fry remaining in river three years after hatching,		Egg. Fry,	Fry,	Fry,	Smolt & Grilse 3—9½	3½—10¼	8—20	13—25?	15—31	(20) 24—31	20—31		
100 °/₀ Summary of all fry,		Egg. Fry,	(92°/₀ Fry). 3—9½	(32°/₀ Fry). 3—10¼	3—20	3½—25?	8—31	13—31	15—31	20—31	20—31		

(11.)

(See the Evidence of Mr. HOLT, qq. 10921–10928.)

SUMMARY OF MARKED SALMON.

SEASON 1898–1899.

River.	Total No.	Males.	Females.	Name.	Date.
Bann, . .	15	6	9	Mr. R. L. Moore, per Mr. T. M'Dermott,	Dec. 20th to Jan. 4th.
Corrib, . .	19	3	16	Mr. T. G. P. Hallet, per Mr. J. Lyden,	Feb. 10th to Mar. 9th.
Erne, . .	31	13	18	Mr. R. L. Moore, per Mr. J. Swan, .	Dec. 22nd to Jan. 9th.
Foyle, . .	28	8	20	Mr. R. L. Moore, per Mr. T. M'Dermott,	Dec. 21st to Jan. 1st.
Total, .	93	30	63		

SEASON 1899–1900.

River.	Total No.	Males.	Females.	Name.	Date.
Ballysadare, .	31	25	6	Colonel Cooper, per Mr. J. Scott, .	Jan. 4th to Feb. 24th.
Bandon, .	16	4	12	Mr. M. Frewen, per Mr. F. Stenning,	Dec. 8th to Mar. 7th.
Bann, . .	49	30	19	Mr. R. L. Moore, per Mr. T. M'Dermott,	Dec. 30th to Jan. 24th.
Kenmare Blackwater.	14	7	7	Mr. R. M'Clure, . . .	Dec. 9th to Dec. 29th.
Boyne, . .	19	6	13	Mr. R. R. FitzHerbert, . .	Dec. 8th to Dec. 15th.
Burrishoole, .	10	–	–	Mr. M. Anketell Jones, . .	Mar. 12th to Apr. 11th.
Carragh, . .	38	13	25	Mr. R. Power, Mr. F. J. Chute, Mr. C. O'Brien.	Jan. 17th to Apr. 3rd.
Corrib, . .	33	21	12	Mr. T. G. P. Hallet, per Mr. W. N Milne and Mr. J. Lyden.	Dec. 29th to Apr. 17th.
Currane, .	40	12	28	Mr. J. E. Butler, Major Creswell, Mr. T. M'Carthy.	Dec. 14th to Apr. 19th.
Erne, . .	98	38	60	Mr. R. L. Moore, per Mr. J. Swan, .	Dec. 8th to Jan. 22nd.
Foyle, . .	54	26	28	Mr. R. L. Moore, per Mr. T. M'Dermott,	Jan. 15th to Jan. 18th.
Laune, . . .	33	16	17	Mr. Richard Power . . .	Dec. 26th to Mar. 15th.
Nore, . .	20	8	12	Major E. C. Hamilton, . .	Dec. 20th to Dec. 30th.
Owenea, . .	49	31	18	Mr. J. A. Pomeroy, . . .	Dec 16th to Jan. 1st.
Screebe, . .	45	25	20	Mr. Howard St. George, per Mr. C. Stanley.	Dec. 8th to Dec. 16th.
Shannon,	30	12	18	Mr. J. A. Place, Captain S. C. Vansittart.	Feb. 2nd to Apr. 30th.
Slaney, . .	40	12	28	Mr. R. Hall Dare, per Mr. Sim, .	Dec. 16th to Mar. 21st.
Suir, . .	15	4	11	Lord Donoughmore, per Mr. J. Gearon, .	Feb. 7th to Apr. 5th.
Total, .	634	290	334		

XXXIV.

Documents put in by Mr. Wrench-Towse.

(See the Evidence of Mr. Wrench-Towse, q. 609.)

(5.)—Facsimile of a Certificate of Origin.

CERTIFICATE OF ORIGIN. A.

_____ 189__

Salmon, weight_____lbs.

Trout_____

Char_____

By whom captured_____

Date of capture_____

Place of capture_____

State whether captured by Fixed engine, Net, or Rod and line ... } _____

Name of Owner or Lessee of Fishery_____

Name of Person to whom Salmon, Trout, or Char forwarded or sold } _____

Address of Person to whom Salmon, Trout, or Char forwarded or sold } _____

Signature of Person by whom captured, his Employer or Agent } _____

Address_____

TAKE NOTICE.

1 The above particulars must be filled in and certified by a Magistrate, or Superintendent of Police, or Chief Water Bailiff, having knowledge of the transaction or the person by whom the fish was captured.

Official Signature_____

Qualification_____

Address_____

Date_____

2 To avoid seizure or detention the above certificate must be carefully preserved intact, and be and remain attached to the fish.

3. Between the 3rd day of September and the 1st day of February,* both inclusive, no person shall consign or send by any common or other Carrier any Salmon, Trout or Char unless the package containing the same shall be conspicuously marked by painting or branding the word Salmon, or Trout, or Char respectively on the outside thereof. *Vide* the Salmon and Freshwater Fisheries Act, 1892, 55 & 56 Vic., c. 50.

* If for Exportation this Certificate is required to 30th April. 33 & 34 Vic., c 33

This is the Exhibit marked A, referred to in the Solemn Declaration of _____, on the Split Certificate No._____, dated the_____day of_____18__, which accompanies the consignment of_____Salmon, weighing_____lbs., to_____of_____declared before me this_____day of_____18__

August, 1896.

(6)—Facsimile of a Certificate of Origin for Salmon caught by Rod and Line, in the form of a Label.

CERTIFICATE OF ORIGIN

For Salmon caught by Rod and Line only.

——189—

One Salmon, weight——lbs.
Trout, ,, ——lbs.
Char, ,, ——lbs.
Date of Capture——day of——189—
Place of Capture——
Name of Owner or Lessee of Fishery. }——
Signature of Person by whom captured. }——
Address in full——

[FRONT]

SALMON.

M——

per——Ry. Date——189—

[BACK.]

(7.)—Facsimile of a Salmon Storage Notice.

[FRONT.]

TO THE WORSHIPFUL COMPANY OF FISHMONGERS,
LONDON.

I beg to give You Notice that it is my intention to store Salmon prior to the commencement of the Close Season, 189 , for sale or exportation during the coming Close Season, and in order to facilitate my intention I shall feel obliged by your giving instructions for an Account of my Stock of Salmon to be taken on the first day of the coming Close Season, 18 , and to have the fish sealed in such a manner as you may direct and my refrigerator locked up by the proper authorities.

In consideration of your complying with this my request, I hereby undertake, at all times, to give every facility to your Officers for the inspection of my premises by them, and also to give every information in my power to them respecting the said fish, and I hereby further undertake to instruct and direct all my Agents and Salesmen in all Towns to give all facility and information aforesaid. And I hereby further undertake to pay all charges incurred by you or your Agents to carry out the above work.

Dated this day of , 18

Signature——

Address——

[BACK.]

SALMON STORAGE NOTICE.

No.—— Date——189

Name——

Address——

M

XXXV.

Documents put in by Mr. J. A. Place.

(See the Evidence of Mr. Place, qq. 579–580.)

(1.)—Letter from Limerick Board of Conservators to the Under Secretary, Dublin Castle, on the Observations of the Commissioners of Public Works as to the Effect of the Shannon Drainage on the Fisheries of the District.

Inland Fisheries.

No. 8 or Limerick District.

Limerick, 17th April, 1890.

Sir,—The Commissioners of Public Works have considered it necessary to address to you a series of "Observations" upon the report of the Inspectors of Irish Fisheries, dealing with the question of whether damage is being done, or is likely to be done, to the fishing interests in the River Shannon by drainage works. It has been deemed desirable to append a printed copy of these "Observations" to the Report of the Inspectors with the view, apparently, of neutralising the effect which the report must have upon those who have to deal with the question of the Shannon Fisheries. We think it right that the statements of the Commissioners of Public Works should not go unchallenged; and as we have now no other opportunity of rebutting their statements, we beg to lay before you our reply upon the subject, as all responsibility in connection with the fisheries of this district rests upon our Board.

We do not consider it necessary to refer to the repeated complaints and remonstrances which for some years past have been addressed by us to the Commissioners of Public Works, as to the damage they have already done to the fisheries, or to the letters and resolutions sent to the Chief Secretary, in which our apprehensions as to the injurious effects of the drainage scheme proposed under the Bills of 1888 and 1889 were stated, more than to show that it was in response to these persistent representations that the important questions at issue between us and the Commissioners were finally referred by the Chief Secretary to the Inspectors of Irish Fisheries, whose special province, in consequence of their large experience and official position, it must have been apparent from the outset such an investigation became. How thoroughly we have been justified in the views so often put forward by us is amply borne out by the report of the Inspectors.

It is a reasonable ground of complaint by us that, although the Commissioners of Public Works got official notification of these inquiries, they did not appear by counsel before the Inspectors, either to challenge the statements of our witnesses, or to produce evidence in support of their own views. Copies of the Inspectors' report, dated September, 1889, and notes of evidence were, however, submitted to them by the Government, whilst at the same time our Board, at whose instance the whole proceedings were undertaken, was refused the report, and did not receive it until March, 1890, when what may be termed the Commissioners of Public Works' defence was attached to it.

At the outset of this defence the Commissioners refer to the misapprehension which exists "as to the precise position of this department (Board of Public Works) in regard to the two sets of operations which have formed the subject of the inquiries." This misapprehension might have possibly been removed, and the Inspectors' labours considerably lightened, had a responsible official of the Commissioners attended the inquiries and assisted the Inspectors by removing the misleading impressions conveyed both by the memo. attached to the Shannon Drainage Bill and the "hand plan of the Shannon prepared for Parliament for the new Bill."

We confess that the assertion which the Commissioners of Public Works here think it necessary to make, "that the late Mr. Gamble—chief hydraulic engineer to Government—had no official connection with, nor was he under the control of, this Board in respect to the preparation of the plans and estimates for the scheme adverted to, and this, it is hoped, will explain some misapprehensions which find place in the report of the Fishery Inspectors," is not very conclusive when we read that gentleman's sworn evidence given in reply to Sir Thomas Brady and others. Being asked (Q. 1636)—"Then you have got nothing whatever to say to the Board of Works or its departments, for the Board of Works and the Treasury are perfectly distinct bodies?" he says—"Oh, yes, I am under the Chairman of the Board of Works, so far as these Shannon works go."

Q. 1638.—"Are you quite correct in saying that you are under the Chairman of the Board of Works?"

He replied—"For the Shannon works.'

Dealing with the excavations in the bed of the river at Killaloe, the Commissioners say—

"There is no reason to think that any permanent injury will result after the completion of the work, as where there is gravel there is no reason why the spawning beds should not be re-established. Were, however, contrary to all the probabilities, the whole of the old spawning ground here destroyed for ever, it is needless to say that the effect, as compared with the vast extent of such ground both in the main river and its tributary streams, would, taken by itself, make such a loss a mere bagatelle."

And again—

"Only a length of 1,800 yards of river bed are now being excavated at Killaloe and Lough Allen, and under the new Bill the operations should not exceed six miles, or a total not more than one-third of the length formerly carried out without any public notice apparently being taken of the matter."

Had the Commissioners the least experience of what was or what was not a suitable spawning ground, or had they given the matter the slightest reflection, this curious mode of dealing with such an important subject would not have been adopted. It is only necessary for us to quote what Mr. Frederick Eden, Special Commissioner of Fisheries, has written bearing on this very question. In a letter addressed to the Inspector of the Limerick District, and dated so far back as 1864, he says—"The Shannon, I need scarcely say, is of great size and of corresponding value, but owing to its peculiar natural character it requires especial care in order that its production may at all equal its capabilities. It drains 4,000 square miles to Wellesley Bridge: the whole fall from Lough Allen, which may be called its source from the sea, is only 160 feet, but the fall from Killaloe to Limerick is 97 feet, and whatever fall there is at other parts of the main river is confined to particular spots by the navigation weirs. *The effect of this is to limit the spawning grounds*, and the Shannon above Killaloe may be almost looked upon as a lake."

The spawning grounds—such as remain of them—in the Shannon have always been regarded by our Board as of the first importance, inasmuch as the difficulties and expenses of preservation are very slight,

the great size of the river affording a natural protection for spawning fish, whilst in the tributaries it is hardly necessary to point out that the dangers are a hundredfold greater, as in times of flood the fish ascend to remote and unfrequented places, where the torch, spear, and gaff can be used with impunity, and where, owing to the enormous expense it entails, it is quite impossible to maintain a sufficient staff of bailiffs. We now have it on the authority of the Commissioners' own letter that six miles of the bed of the river is to be excavated, which (when considered with Mr. Eden's remarks and the evidence given at the inquiries) means that, with the exception of the spawning beds below the village of Killaloe and at Castleconnell, almost the entire remaining portion of the bed of the river suitable for spawning is to be, or has already been removed. As to no notice having been taken of former excavations made by the Shannon Commissioners, when, to quote from the Commissioners' observations, "spawning beds were removed in all directions," it will easily be accounted for when it is borne in mind that nearly all those works were executed under the Acts of 5 & 6 William IV, cap. 67, and 2 & 3 Vic., cap. 61, long before Boards of Conservators were formed, *and during the period that the Commissioners of Public Works in Ireland were also the Commissioners of Fisheries!*

It is, however, relied upon by the Commissioners that these drainage works have had a beneficial effect upon the salmon fisheries, and the Corrib, Bann, and Erne fisheries are pointed to as having been vastly improved thereby. It is further asserted "that where there is gravel there is no reason why the spawning beds should not be re-established," and a letter from Mr. S. U. Roberts, C.E., who it is not stated has the least experience in fishery matters, but who carried out the engineering works connected with the Corrib, is quoted to the effect that, "although salmon spawning beds were to a large extent destroyed by the removal of shoals in the progress of the works referred to, others were quickly formed by fresh deposits of gravel both in the River Corrib and its tributaries." With regard to this statement, we have been in communication with Mr. Miller, J.P., one of the owners of the Galway fishery. Referring to the River Corrib, which, the Commissioners state, "presents features similar to those of the Shannon," he says:—

"The spawning beds that were removed by excavation between Lough Corrib and Galway never formed again, with the exception of a small spot where gravel happened to lie adjacent to the place."

And Mr. Robert Lyon Moore, D.L., the owner of the Ballyshannon fishery, writing on this point, says, regarding the excavations in the Erne—

"The spawning beds have not formed again, nor would they (if they could) be permitted to re-form, as they would interfere with navigation which is connected with the drainage scheme."

These observations, coming from two such experienced authorities connected with the very rivers cited by the Commissioners of Public Works as analogous to the Shannon, we venture to think, effectually dispose of this argument.

It will not be contended by us that, where a serious barrier to the passage of fish exists, its removal will not improve the fisheries; on the contrary, as was the case in Galway, it must necessarily improve them, but the works there differed vastly from those undertaken on the Shannon. Circumstances alter cases, and we here give the report of Mr. Miller upon the Corrib works, so far as it bears upon their effect upon the fisheries.

"Several of the mouths of tributaries were deepened at the time the level of the lake was lowered, two fish passes were erected in different tributaries, and high falls were cut away, thereby letting salmon enter and possess new breeding grounds they could never reach before, to the extent of forty or fifty miles."

In no single instance do the Commissioners of Public Works contemplate the execution of works which will lead to a similar result upon the Shannon.

Turning to the Erne fishing, we find Mr. Edmund Murphy and Mr. Price, C.E., neither of whom is alleged to have any knowledge whatever of fisheries, quoted as attributing an improvement in the salmon fishing in that river to the drainage works, the latter stating that "Mr. Murphy (before whom very heavy claims for damages to the fishery were preferred) was quite justified in his award of nothing excepting for temporary damage." The introduction of these statements of the Government arbitrator and engineer of works by the Commissioners is misleading in the extreme, and we do not hesitate to say have been put forward in an unfair manner; for why is it not stated that Mr. Murphy awarded a sum of £11,140 to the owners of the fishery, £10,000 being for the removal of an eel weir, and £1,140 "for damage to salmon fishery and fishings;" that the owners of the fishery traversed this award before the late Mr. Baron Dowse and that a jury increased it to £1,920, a sum, however, still totally insufficient, for the result has proved the rod fishings, which were of great value (and which Mr. Murphy said "would not be injured") to have been, Mr. Moore tells us, "completely destroyed." No allusion is made by the Commissioners, or Messrs. Murphy and Price, to the salmon hatchery which was erected on the river coincident with the drainage works.

Writing of this hatchery, Mr. Moore says—

"When I found the drainage works necessitated the removal of the best and safest spawning bed in the Erne, I at once established hatcheries to compensate for its loss. In 1880 I first turned out a few salmon, viz., 30,000, and finding I was successful, and that the large spawning beds were to be removed, I increased the hatchery, and in 1881 I turned out 600,000 fry, which has varied in amount up to the present year, when there will be turned out upwards of a million. It is this has led to the effect of preserving good and steady fishing in the Erne."

The statements of Mr. Price, C.E., "that they (salmon) are seen in quantities and in places never before noticed," and also that "it will be admitted that the Belleek fishery has vastly improved," are explained as to the first by again quoting from Mr. Moore, who says—

"The removal of the Belturbet weir at head of Lough Erne permitted salmon to get into the rivers above it, but this was not connected with Lough Erne drainage. These rivers I have sown with spawn from the hatcheries."

And contradicted as to the second by another quotation from the same source. Mr. Moore says—

"There has not been a larger take of salmon in the Erne since drainage works commenced than there has been in other years before."

We are satisfied that, when these authoritative statements and the source from which they come are carefully considered, very little weight can be attached, not only to the opinions of these civil engineers on fishery matters, but also to the general contention of the Commissioners of Public Works that an improved condition in the fisheries of the Erne can in any way be attributed as resulting from drainage works.

As to the Bann fishery there would seem to be still more reason to deny the soundness of their contentions, for in this case the Commissioners shield themselves by vague and undefined charges against the Conservancy, and are unable to point to a single instance to verify them. We have, however, fortunately been able to learn the true position of this fishery from Mr. Moore, who is a part owner of it. He says—

"The Bann has very much fallen off in its salmon fisheries, and to try and revive them we purpose erecting extensive hatcheries, for as the river has been kept dredged

no new spawning beds could form; besides, the river is now too deep, as fords were cut away: the fishery (salmon) is going from bad to worse, and I expect we will ask the Inspectors to hold an inquiry to try and get at the cause, but most decidedly the river has not been improved by the drainage works; this can easily be understood, as salmon love rapid running and broken water"

Of the three cases cited, this is really the only one which appears to us to be analogous to the Shannon, for here, too, nearly all the fords have been removed, and the few remaining ones are to be removed, the result being that the rapid and broken water which seems to be so necessary to the habits of salmon must, save in very exceptional places, all disappear, and to this we do not hesitate to attribute the reason why, as was pointed out in a special report by the late Major Hayes, one of Her Majesty's Inspectors of Irish Fisheries, "the fisheries of the Shannon and its tributaries have been very much less productive than from their great extent and capabilities they ought to be."

Assuming that the Irish salmon fisheries are in a more prosperous state than formerly, the Commissioners of Public Works, had they even a superficial knowledge of the subject, would hardly have implied and argued that the effect was due to arterial drainage and navigation works, and would have known that the instances they adduced did not, to use their own words, prove the validity of their contention either on practical or technical grounds. Their extraordinary effort to bring the English and Scotch Fishery Departments into conflict with the Irish does not seem to have strengthened their case in the least. The English Department states that "the removal of an obstruction will increase the general produce of salmon." Here it must be assumed that such an obstruction is meant as salmon could not previously surmount. The Scotch Department say nothing in reply to the Commissioners' queries, but Mr. Young, H. M. Inspector of Scotch Fisheries, gave some evidence before the Select Committee on Irish Salmon Fisheries, 1884–85, which appears to us to bear directly on this subject. He says in reply to Question 4163 —

"The Tweed, in the early part of the present century, produced 200,000 of salmon and grilse in the year; now it only produces 50,000. We found the falling-off coincident with the land drainage of the district.

If improvement has taken place in the fisheries generally, the only logical conclusion that can be come to is that it is due rather to the special remedial legislation enacted for their protection than to the accidental effect upon them of the Commissioners of Public Works' drainage schemes, for it is not contended that these schemes were in any single instance introduced or carried out for the benefit of the fisheries. In support of this we beg to remind you of the 11 & 12 Vic., cap. 92 (1846), under which District Boards of Conservators were formed and licence duties levied for the payment of water bailiffs; the 13 & 14 Vic, cap. 88 (1850), which, amongst other things, imposed penalties for the re-erection of weirs after conviction, placed certain restrictions upon the use of nets, made better provisions for the regulation of mill sluices and for enforcing free gaps in fishing weirs; and the 26 & 27 Vic., cap. 114 (1863), which abolished all bag nets and numbers of stake weirs in the estuaries, compelled the owners of stone weirs, without any compensation, to open larger free gaps in them than theretofore, and extended the protection afforded by the weekly close season by twelve hours.

In dealing with the important question of lowering the summer level of Lough Derg, which is regarded both by our Board and the Inspectors of Irish Fisheries as likely to be of disastrous consequences to the salmon fisheries of the district, the Commissioners of Public Works undertake that, "should any rocky bar be found to exist at an inconvenient height after scouring away the sand at the mouth of any tributary, such as would create a real obstruction, they will provide a sufficient channel." This admission on their part prevents the necessity of our considering at any length the purely theoretical argument by which they endeavour to show that it may not be necessary to deepen the mouths of any of the tributaries. Mr. Gamble evidently thought differently, for as regards some of the tributaries he admitted in his evidence that for navigation purposes, at all events, they would require to be deepened, and that he had included the cost in his estimates. What applies to the larger tributaries must apply with still greater force to the smaller ones. Take for illustration Mr Gleeson's (solicitor) evidence on this point—p. 30, query 1061. He says:—"If you take two feet off the lake (Derg), you will leave a space of a quarter of a mile opposite the mouth of the Nenagh river dry, and you will have only a trickle of water running for a river." This trickle may be diverted into a score of smaller streams, or may spread over the large surface of the shore exposed, which will further reduce its volume and render it still more insufficient to admit of the passage of fish.

As the Commissioners of Public Works refer at considerable length to complaints made to them so long ago as 1883, and which they state also found their way into the Press, "that numbers of fine salmon had been killed in attempting to pass the sluices," we wish to point out that these complaints were not formulated by our Board, and that no allusion whatever was made to the destruction of fish in this way at the recent inquiries. We, therefore, fail to see the necessity for the allusion to it in the Commissioners' "Observations," which purport to bear only on the report of the Inspectors, and we must respectfully decline to be held responsible for either newspaper reports or the views of individuals

The injury caused by the working of the sluices to the ova, to fry, and to public and private fishing rights, is, however, a different matter, and an examination of the evidence of the witnesses who were examined upon it will leave no doubt as to grounds for our assertions, That Mr. Crosthwaite, the district engineer of the Commissioners, tries to control the sluices with due regard to the navigation and drainage of the river, we are willing to concede. Notwithstanding this, however, the Commissioners themselves state that at times "a valve may have been lifted more quickly than was desirable." If they have been opened too quickly it is not unreasonable to conclude that they have been also closed too quickly, and that this has caused a large loss of both ova and fry is proved by the sworn evidence. On one point, at all events our contention seems to be granted, for the Commissioners allow that the sudden opening of the sluice valves causes a stream to be sent down which starts the fish from the pools below. But this evil is not counterbalanced, as the Commissioners suppose, by the fish in the pools lower down re-stocking those higher up, for the effect of the rise in the water thus caused is felt for miles, and some waters, being more suitable are better stocked than others, so that it may take days, or until a fresh run of salmon ascend from the estuary, to re-stock them. That the fishing in that portion of the river influenced by the sluices is utterly destroyed when these rises in the water occur, is not denied by the Commissioners.

If evidence of the slight regard paid by the Commissioners of Public Works to the action of these sluice valves upon the fisheries is needed, it is only necessary to refer to the experiment which they suggested should be tried at Killaloe, and which they specially mention in their "Observations." The extent of this experiment was, as we understood it, to close no less than fourteen sluices at a time, and although the water was then high and little or no

injury might have resulted from it, yet the proposal was so monstrous that Lord Massy and Capt. Vansittart, who had become aware of it, telegraphed to have it stopped . and at the next meeting of our Board it was ordered—"That the Commissioners be informed that the Conservators do not want 'an experiment.' What they required was a continuous experience of the working of the sluices for some time during low water, not now when the river has risen (since the commencement of their correspondence on this subject) to almost winter level. The value of the spawning beds of the Shannon is too important to be treated to experiments" The experience here alluded to was to have been arrived at by an agreement come to between Mr. R W C. Reeves, a member of our Board, and the Chairman of the Commissioners of Public Works, who undertook that every facility was in future to be given us for noting daily the number of sluices necessarily opened or closed and its consequent action on the river How this arrangement was at first carried out is best explained by copying the following resolution, which appears in our minute book of 2nd May last, viz :—"We regret to learn that the Board of Works' representative at Killaloe has refused to give our head bailiff at that place information as to the working of the sluices. That we request an order may be made to remedy this, and that Mr. Crosthwaite may be authorised to consult with our engineer as to the best means of measuring the rise and fall of the water below the sluices." The object of the Conservators was to have the effect of the daily working of the sluices upon the spawning beds properly tested, which object would not have been attained by the suggestion of the Commissioners of Public Works to lower the water on a particular day. In dealing with this matter, we must protest against the tone adopted by the Commissioners, and that they should, in the face of the sworn evidence adduced at the inquiry, "decline to accept the supposed destruction (of ova and fry) as in any way proved," especially as the Commissioners' views as to the regulation of a river by sluices are only supported by implication and inference. It must be apparent to anyone (except the Commissioners of Public Works) that closing a number of sluices must of necessity cause the river to fall more suddenly than it could possibly fall naturally. Of course, as stated by the Commissioners, it is obvious that where the banks slope pretty evenly fry cannot be left high and dry, and it has never been contended that, where the nature of the bed of the river does not admit it, fry can be so caught, but the evidence distinctly proved that at certain specified places the injury did occur and occur largely.

The important question of fish passes remains to be dealt with. That of Jamestown is first referred to by the Commissioners, and no attempt is made by them to deny that they had acted in contravention to the law in erecting in 1881 a pass in the new regulating weir there without its having been approved by the Inspectors of Fisheries It is stated in the Commissioners' "Observations" that two years after its erection, in 1883, Sir Thomas Brady reported that a good fish pase had been erected by the side of the pier on left bank of river, and expressed his opinion "that fish would ascend through the pass, though the entrance might be made much easier." That a certain plan of pass placed in the old weir was effective is no reason why the same plan of pase should be equally effective when constructed in a totally different weir and under very altered circumstances. The terms of Sir T. Brady's reference to it shows that it was not wholly satisfactory, for, as he states, "the entrance might be made much easier." This may be easily understood when we explain that the steps do not go the whole way to the bed of the river, and that they project beyond the foot of the weir. The report of Sir Thomas Brady which is quoted is dated the 16th December, and no doubt at that season the pass had a full volume of water flowing through it, and was seen to its best advantage. At the time, however, that it was inspected by members of our Board it was almost dry.

As regards Meelick we fail to see that the quotations given by the Commissioners from Sir Thomas Brady's report of September, 1883, have any bearing on the Inspectors' report of 188, except to show that Sir T. Brady's suggestions in the interests of the fisheries were not carried out. We have it on the evidence of Mr. Crosthwaite that what is called the "New Cut" at Meelick is practically the main channel of the river; that there are eighteen sluices in it, that at times these sluices are all closed, and that no fish pass has been erected there. Then we have the evidence of Mr. F. Le Poer Trench, Q.C.,

> "That salmon and trout frequent the New Cut when the sluices are open; that fish spawn in it, and that when the sluices are all closed the fish could not get up, even a trout could not live in it, and there are plainly to be seen spawning beds left high and dry."

No attempt whatever is made by the Commissioners to answer this grave indictment, save that it is asserted that "a fish pass in the new channel would involve the abandonment of the navigation above Meelick, and would give the greatest facilities for poaching;" but why and how they do not attempt to explain. That the Commissioners of Public Works have at times altered their plans and calculations is illustrated by a reference to the works in progress last summer at Lough Allen, and if the Inspectors of Irish Fisheries had been duly apprised of what was taking place at Meelick when the New Cut and sluices were being made, we have no doubt but that in this case, too, a suitable provision would have been made for the passage of salmon at all seasons, as the law requires. Mr. Hennessy, C.E., in his evidence upon the subject of the Lough Allen pass and sluices, says—

> "The sluices originally contained four bays of twenty feet each, and now only three bays are fitted as sluices; another fourth bay of the original sluices is reconstructed, and is being formed into a fish pass. The fish pass originally intended [a small ladder pass close to the right bank] has been abandoned, and the water way has been reduced about one third of its sluicing power."

By this it would appear that in that careless fashion, which unhappily seems to characterise many of the works of the Commissioners, the original pass was not only commenced, but finished without any reference to the Inspectors as to whether it was constructed according to law or not, and upon their refusing to sanction it, one of the bays intended to be devoted to the sluices, which were, we assume, built to accommodate a certain calculated discharge from the Lough, is transformed into a fish pass, the sluices are not remodelled in any way to meet the change, and, as Mr. Hennessy tells us, one-third of the sluicing power is abandoned apparently without its making the least difference in the engineering designs of the Commissioners It is not only, therefore, possible, but probable, that should the Inspectors insist upon it, a similar engineering feat may be found practicable at Meelick.

As to the maintenance of the fish passes in the river, we are pleased to learn that the Commissioners have now "instructed their district engineer to take whatever steps may be necessary to secure these salmon passes being at all times properly maintained." We trust that these instructions apply to their efficiency as passes, for Mr. Crosthwaite's explanation, "that he would not allow damage to remain unrepaired so as to endanger the masonry," is not very reassuring, as that gentleman in his examination described the Rooky pass as "a broken gap in the wall," and admitted that "he was never close to it," which will perhaps explain how for years the entrance to this pass has been allowed to remain blocked with stones.

The Commissioners regret that this question of fish passes "should have been forced upon them in a controversial form." To any one familiar with the history of the Shannon fish passes, it is difficult to conceive how the matter could be brought forward in any other form; it was so brought forward in 1860, when Mr. Brady (now Sir Thomas) wrote to the Commissioners of Public Works complaining that it had been stated to him on oath that salmon had disappeared from the upper waters of the Shannon, where formerly there was a very prosperous and valuable salmon fishery carried on, owing to the insufficiency of the then fish passes, those at Tarmonbarry, Roosky, Knockvicar, Jamestown, and Meelick, all being found fault with in detail. A year later Mr. Forsyth, who was specially instructed to inspect and report upon these passes, wrote of Athlone, "that for the most important part of the year no fish do or can go up," of Tarmonbarry, "that it is ill-contrived, wrong placed, and of the rudest workmanship," and that "he was informed it altogether failed to meet the purpose for which it was intended;" of Roosky, that "it is almost beyond conjecture why the fish pass should have been made in the eastern weir, &c.," of Jamestown, "that the present gap is almost useless;" and of Knockvicar, "that it is liable to the same objections as that at Tarmonbarry." Nearly five years afterwards we find that but two of these passes, those at Tarmonbarry and Athlone, have been rebuilt, but not in accordance with the plans supplied by the Special Commissioners of Fisheries, that the Tarmonbarry pass was so defective that the Commissioners were "specially compelled to pass a bye-law to protect the fish within twenty yards of the weir wall;" and "that a deputation of our Board waited on his Excellency the Lord Lieutenant at the Viceregal Lodge, in order to bring under his notice the defective state of the fish pass lately constructed by the Board of Works in the navigation weir at Athlone." These two passes were in time remodelled, but the others were not rebuilt until five or six years afterwards, the Commissioners of Public Works stating in one of their explanatory letters to the Treasury as to the delay that

> "They are satisfied that the construction of these passes is a matter of very small importance indeed as regards the prosperity of the fisheries."

We are glad that after twenty years the Commissioners of Public Works have become more enlightened, and that, as stated in their "Observations" on the Inspectors' report, they now "recognise their importance in the fullest sense."

As to the effect upon the fisheries of the recent drainage schemes and works which are being constructed by the Commissioners, we certainly have no desire for controversy, and, with the view to avoiding it, sought the intervention of the Inspectors of Irish Fisheries upon the questions at issue between us. They, as the most qualified experts in the country, have reported supporting our views in every detail, and, that being so, we beg most respectfully to protest against the Commissioners' "Observations," which we have here controverted, being adopted in regard to the Shannon fisheries. We also beg to remind you that the law has given the control of the fishery interests to the Conservators of the district and the Inspectors of Irish Fisheries, and it is manifestly unfair that another public body, having no responsibility in regard to the fisheries, but having directly opposing interests in charge, should be allowed to usurp the functions of the Conservators and Inspectors, and endeavour to ignore or discredit their views and representations.

This, we regret to say, has been the tone which has been adopted throughout the "Observations," and when we come to deal in practice with the action taken by the Commissioners we find that they have entered upon the river, torn up the spawning beds for miles, neglected to maintain the efficiency of the existing fish passes, and failed to construct passes of any kind where necessary. The Commissioners have done these things without any consultation with the Conservators or Inspectors, even without any notice whatever being given to them or regard paid to that which is specially and legally their estate and prerogative, thus rendering their office in the conservancy of these matters absolutely useless. So far have they shown no desire to act in concert with us, that, when we applied to them to be furnished with maps or plans of their Shannon works, they replied that "it is opposed to the rules of this department to supply plans," and it was not until a resolution was forwarded to the Lord Lieutenant asking him to direct that they should be given, and also a personal application was made by Lord Monteagle to the Treasury, that we received them.

It may be here mentioned that it is only within the past few months we succeeded in obtaining convictions against certain persons for having driven their carts through the bed of a tributary, and for having taken some loads of gravel from it, under the 73rd sec. of the 5 & 6 Vic., cap 106, which provides that if the spawn or fry of salmon, trout, or eels is injured or disturbed, or any spawning bed, bank, or shallow where the same may be, the person so doing is punishable by a severe fine or the alternative term of imprisonment. But the wholesale destruction by the Commissioners of Public Works cannot be so dealt with, for when the recent excavations at Lough Allen and Killaloe attracted such widespread indignation, the opinion of very eminent counsel was taken with the view of applying to the Vice-Chancellor for an injunction to restrain the Commissioners from devastating the spawning beds, and it was his opinion that the Commissioners were so protected by the earlier Acts giving them power over the Shannon, that our application for an injunction would not succeed, and that the Act above quoted could not be construed to apply to them.

Throughout the "Observations" of the Commissioners no allusion has been made to the enormous value of the Shannon salmon fisheries, which produce not less than £50,000 a year, and afford employment to some 2,000 fishermen, bailiffs, boat-builders, and others. Such an industry should be regarded as of paramount importance when dealing either with the navigation or drainage of the Shannon. According to the Report of the Royal Commission (1877), the gross rental of the former is only £1,430 a year, and as regards the latter the valuation is but £6,000 a year. This valuation, it should be remembered, was made more than twenty years ago.

Notwithstanding this disparity of interests, we find in the recent Drainage Bill, for which the enormous sum of £263,000 is asked, in addition apparently to the £108,000 spent within the last ten years, no recognition of the rights of the Board of Conservators, no provision that the designs and intentions of the Commissioners will be submitted either to them or the Inspectors of Fisheries, that their judgment and guidance may be obtained on such points as distinctly appertain to them; in fine, no proposal of any kind whatsoever is made to safeguard the large public and private property in the fisheries.

Bearing in mind the authoritative statements (the result of the sworn inquiry held by them) of the Inspectors as to the extensive injury already inflicted on the Shannon fisheries, we would impress upon you the necessity of having the Commissioners of Public Works at once obliged to reconstruct the fish passes on the main river where they have become inefficient through the introduction of sluices into the navigation weirs. We would ask you to have erected a suitable pass in the New Cut at Meelick. That as the most valuable spawning beds in the river have been torn up to build passes in such of the tributaries and on such sites as the Inspectors may direct, in order that new breeding grounds may be opened up. That a salmon hatchery be erected at Killaloe or

other suitable site. That in any new Bill that may be introduced dealing with the Shannon, special care will be taken to protect the valuable interests which exist in the salmon fisheries; and, finally, that in any case some method may be speedily devised by which the Commissioners of Public Works may be prevented from continuing to destroy the fisheries of the Shannon.

We have the honour to be, Sir,

Your obedient servants,

GASTON MONSELL, *Chairman*, } Limerick Board
J. B. ALTON, *Secretary*, } of Conservators.

The Under Secretary, &c.,
Dublin Castle.

At a Special Meeting of the Limerick Board of Conservators (Hon Gaston Monsell, D.L., in the Chair), held on Thursday, the 17th instant, it was proposed by Mr. James Greene Barry, J.P., and seconded unanimously, that the foregoing reply to the "Observations" of the Commissioners of Public Works be adopted.

It was also proposed by the Chairman, and seconded unanimously:—"That the Limerick Board of Conservators beg to point out to the Chief Secretary that, except the few copies furnished to them by the Government, no copies of the Report of the Inspectors of Irish Fisheries are procurable by the general public in either London or Dublin. The Limerick Board of Conservators respectfully request that their Reply may be printed and bound together with the Report of the Inspectors of Irish Fisheries, as has been done with the 'Observations' of the Board of Works."

(2.)—The Shannon Drainage Bill and the Fisheries.

Fisheries Office.

Limerick, *25th October*, 1890

Dear Sir,—I am directed to send you the following report received from the Chief Secretary's Office, and which will be considered at next meeting of the Board.

Your obedient servant,

J. B. Alton.

(Copy.)

Board of Trade,
1st August, 1890.

Sir,—I have the honour to report that, in accordance with the instructions of the Lords Commissioners of Her Majesty's Treasury, contained in your letter to this department of the 24th June last, I have visited the Shannon, my inspection of the river itself having extended from the 19th to the 23rd July. I desire to express my thanks for the cordial assistance which I received whilst in Ireland from the Commissioners of Public Works and from the Inspectors of Fisheries, and also from Mr. Crosthwaite and Mr. Place, who gave me the great advantage of their company from Limerick to Lough Allen.

The main River Shannon between Killaloe and Lough Allen seems originally to have consisted of a series of long stretches of dead water separated by a few comparatively short rapids, in which the bed consisted either of rock or gravel; these rapids being of a character which fitted them more or less as spawning places for salmon. The effect of the navigation and drainage works which have from time to time been executed, has been, by the excavation of the river bed and by the erection of weirs, to obliterate both the rapids and the spawning beds. Whilst the river between Limerick and Killaloe contains some excellent spawning ground, I saw but few places between Killaloe and Carrick-on-Shannon where salmon would be likely to spawn at all, and the value of these places is not very considerable. Such having been the case previous to the commencement of the works now in progress, the destruction of further spawning beds must necessarily have some effect in increasing the injury to the fisheries. I did not follow the river between Carrick and the Lough Allen works, but I was informed that there was good gravel at Battle Bridge.

In compliance with the request of the Commissioners, I visited Galway on the 24th, the value of the fisheries there having increased subsequent to the execution of drainage works. I, however, saw nothing there to change my opinion with regard to the Shannon.

At Galway Bridge the fish were always able to ascend with some difficulty. Their passage has been rendered easier by the removal of rocky barriers and mill weirs, and would now have been altogether unimpeded but for the erection of the new weir above the excavation. The weir, although provided with a good fish pass, delays them so as to frequently cause the wonderful but well-known sight of the river bed being almost paved with salmon. On the other hand, previous to the making of the great rock cutting on the Clare Galway river, near Lackagh Bridge, few fish were able to surmount the natural obstructions in that stream, and the works added some thirty or more miles of a spawning ground to the productive power of the district. I find also that in 1862 a bye-law was made which is still in force, and by which the use of nets in any part of the Clare and Clare Galway rivers is prohibited. All these circumstances would contribute to a great improvement of the salmon fisheries, but none of them exist on the Shannon.

Although, as I have shown, the excavations at present in process will cause some permanent injury to the salmon fisheries, I think the extent of the injury was over-estimated in the evidence given before the Inspectors in 1889. At Killaloe the object is to deepen the bed of the river on an average of about three feet for a length of 2,000 feet from the sluices downwards. The distance from the sluices to the bridge is 800 feet, and from the bridge downwards some 1,200 feet. On a careful examination of the latter portion, I found that about one-third could never have been spawning ground, in consequence of the proximity of the rock to the surface of the river bed. The remainder was gravel of a very coarse description, interspersed with a great quantity of boulders; and although there might at intervals be small patches of finer gravel in which fish would be able to spawn, the extent must have been small. To this part of the works I attach but little importance.

Above the bridge the case is different—the gravel there is finer, and numbers of fish evidently spawned on a great part of this area. In some places, when the excavation is completed, the bare rock will be exposed. In others, it is stated that the gravel extends to a considerable depth, and in them spawning may perhaps again be carried on—though they will not be so well adapted for the purpose as heretofore.

At the exit of the river from Lough Allen a number of confused channels have been absorbed in one great excavation in the peat, having a length of about 8,000 feet. In the old channels the peat appears to have been to some extent overlaid with gravel, possibly brought down by the Arigna river; but as the mouth of that river has been diverted into the lake, the gravel beds such as they were, are not

likely to be replaced. It is probable that a certain number of small spawning beds have thus been lost.

With regard to the efficiency of the sluices as fish passes, there can be no doubt that, provided some of them could be kept open permanently, and provided there was no considerable pressure of water from their upper side, no further fish pass would be required. But this condition is equivalent to the removal of one or more of them, and the substitution of a free gap. The object of the weir is, however, to impound water, and at Killaloe the level above the sluice will at times be so much higher than that below as to create undue pressure. The weir is not so constructed as to lessen the force with which the stream will be discharged, and the apron will prevent there being any depth of water from which fish could run. A fish pass is therefore required—not in substitution for the opening of the sluices, but to provide for times when, from the height of the water behind, the sluices will no longer be available, and this will be the case in some of those states of the river in which fish are generally inclined to ascend. The fish pass which has been built is not effective in itself, but its right wall forms an acute angle with the masonry portion of the dam, and thus evidently now provides a means by which the fish can ascend. Some trifling alterations here, by which the angle would be made somewhat more acute, the wall would be lengthened, and the cut in the weir which now supplies water to the fish pass would be removed to the head of this diagonal, would seem to be sufficient, as the site is certainly the best for the pass. I am informed that at Killaloe two of the sluices can at all times be kept open to a height of three feet. This should certainly be done, and the sluices that are to be open should not be changed, as I found to be sometimes the case.

Great complaints have been made at this place of the sudden opening and closing of the sluices, and a continuance of the strict supervision which has since been established will always be necessary upon this point. The rod fisheries below the weir are valuable, and on them much of the prosperity of the neighbourhood depends; but they would be much injured if the fish were constantly kept on the move by sudden alterations in the volume of water in the river.

At Lough Allen the magnificent sluices are on too great a scale to be conveniently worked with a regard to the ascent of fish, but a large pass has been provided, and the only suggestion I have to make is that none of the sluices should ever be opened to a less height than 18 inches, lest the fish in attempting to pass them should be injured. From the description I received of the tributaries which discharge into Lough Allen, they must be very valuable for spawning purposes.

The proposals of the Limerick Board of Conservators are, that the fish passes on the main river should be reconstructed; that new passes should be made on the tributaries; that a pass should be placed in the New Cut at Meelick; and that a salmon hatchery should be provided.

I examined the whole of the existing passes on the main river between Killaloe and Carrick-on-Shannon, and they appeared to me, as a rule, to be insufficient. The principles on which such structures should be designed are now better understood than was the case at the time of their construction, and in nearly every case the gradient has been made too steep. It was suggested that I should see the pass at Ballycodare, as being the most successful of the Forsyth ladders, and I went there from Carrick on the 23rd, but its gradient is one in thirteen, which easily explains its utility, notwithstanding which I still saw salmon jumping at the fall. When it is considered that the annual produce of the Shannon salmon fisheries alone is reasonably estimated to exceed £40,000, whilst the annual value of the land intended to be benefited by the drainage works has never been put at more than £6,000, and the gross annual receipts from navigation are, as I am informed, about £1,400, it will be seen that their comparative commercial importance fully justifies the provision of the best means for the passage of the fish at the weirs which were erected for the advantage of the other interests. The expenditure could not be considerable, as Athlone is the only place at which the difficulties are of any magnitude.

In my opinion, the great majority of the salmon of the district must spawn in the tributaries, and for a small sum unpretentious fish passes might be erected in some of the more important of these as a set-off against the loss of the spawning grounds at Killaloe and Lough Allen.

The question of Meelick presents some difficulty. There a new and distinct channel has been opened to relieve the older channel during the occurrence of high water, but at other times it is practically dry. It seems to be doubtful whether in a period of drought enough water can be supplied to maintain a constant stream through which fish passes at both weirs, and I should have been inclined to advise that the matter should stand over until it had been seen whether, by a careful use of the sluices, the majority of the fish might not have been induced still to use the old channel, and the remainder might have been passed through before the flow of water was altogether shut off. The 63rd sec. of the Irish Fisheries Act, 1842 (5 and 6 Vic., cap. 106), however, provides that in every new dam, &c., provision should be made for the free passage of fish at all periods of the year; and such being the case, there seems to be no alternative but to insert a fish pass, and to provide it at all times with water. I may mention that the older weir at Meelick has the serious defect of having a perpendicular baulk placed at the head of its sloping face. But for this it would be easily passable at nearly all points whenever a moderate quantity of water was flowing over it.

It is not for me to advise what the form of each fish pass should be, since that power is vested by statute in the Inspectors, but it would seem very desirable that further advantage should be taken of their experience by obtaining their advice on the particular sluices which should be permanently raised, where, as at Killaloe, it is possible to spare the water, and the order in which others should be opened; and, in the event of the mouth of any tributary being altered, on the means to be adopted for securing both a free run for salmon, and, where necessary, the retention of sufficient water on the spawning beds immediately within the mouth of the tributary.

Both the Commissioners and Inspectors are only desirous of doing their best for the fisheries, and it cannot be doubted that, if representatives of each body were to meet on the spot, the form of the passes and all the other matters could be settled then and there, so as to avoid delays. I venture to suggest that, if such a course should be adopted, the Limerick Board of Conservators, who are so largely interested in the various questions, should also be represented.

The fourth proposal of the Conservators is that a fish hatchery should be provided. Whilst I am fully sensible of the advantage obtainable by the introduction into a river of a fresh strain of fish which may cross with and improve the natural breed, I have no belief that it possible at any reasonable cost to produce by artificial propagation an appreciable effect on the commercial productiveness of fisheries for a migratory fish such as the salmon.

I have, &c.,

(Signed) A. D Berrington.

To the Secretary to the Treasury.

XXXVI.

Document put in by Mr. Wrench-Towse.

(See the Evidence of Mr. Wrench-Towse, q. 6609).

IRISH ACTS.

(8.)—Suggestions and Remarks made by the Secretary to the Worshipful Company of Fishmongers, London.

1. Future Acts should be so framed as to permit of uniformity of general principles for protection of salmon fisheries throughout the United Kingdom.

To make a universal close time would obviate to a great extent the present difficulties, but it cannot be effected owing to the various seasons.

The easy transit for sending fish by rail: and it has been proved by the company's work that poached fish is forwarded from Ireland to England, from Scotland to England, and *vice versa*, and from all three countries to the Continent. There should also be uniformity of powers of search and seizure, prosecution of any offender at any place where the fish may be found, and uniformity of penalties.

2. The consolidation of boards for general purposes.

This would be a step towards providing funds for carrying out the objects previously alluded to and of assisting one another where fish from one district are sent to another.

Under present circumstances boards only consider cases in their own districts by which facilities are given to poachers.

Bailiff and other officer are restricted to a particular district—*vide* 5 & 6 Vic., c. 106, section 82, 84, &c.; 11 & 12 Vic., c. 92, section 19; 54 & 55 Vic., c. 20, section 6.

It is owing to this restriction that each officer only troubles about his own district, thus giving a great opening to illegal consignments from other districts.

3. Close time to be defined as close time for nets, 13 & 14 Vic., c. 88, section 1, definition, and is regulated by 26 & 27 Vic., c. 114, section 21; 32 & 33 Vic., c. 92, section 8.

In Scotland 25 & 26 Vic., c. 97, section 8, defines the annual close time, applies to every mode of fishing except *rod and line*, and 31 & 32 Vic., c. 123, section 21, imposes a penalty for buying or selling in close time.

The close time was raised in the Court of Justiciary in *re* Chalmers *v.* Bain, Lord Justice Clerk, in delivering judgment, stating that he had no hesitation in holding that the words of the statute indicating what is the annual close time are not affected, either as to the commencement or as to the termination of it, by considerations as to whether or not rod or line fishing is legal, and decided in favour of the appellant; but in reference to the question that had been raised, whether or not it would be a good defence if the accused proved that the fish were caught by rod and line, said it was not necessary to give an opinion now, but he could not conceal his own view, which was that it would be a good defence if a person accused under such a complaint were to prove that the salmon were taken by rod and line.

The question of legal sale of rod-caught fish in Scotland has never been contested in a Superior Court.

In England the sale of rod-caught fish is expressly prohibited, 36 & 37 Vic., c. 71, section 19.

4. Unseasonable.—To include all fish taken by means which are not lawful at the time of capture or out of proper season; should be clearly defined as fish taken during the close season.

Unclean.—To be defined as fish about to spawn or having spawned. Bad colour, foul, out of condition.

5. General prohibitions.—As in 24 & 25 Vic., c. 109, section 14, English Act as amended by subsequent Acts, 36 & 37 Vic., c. 71, sub-sections 19, 20.

Young of salmon.—24 & 25 Vic., c. 109, section 15, as amended.

These have proved invaluable in working in England. There are no corresponding sections in Irish Acts. (See 12.)

6. Prohibition of sale of rod-caught anywhere whilst close time for nets in the district where caught, 36 & 37 Vic., c. 71, section 19 (as above).

So long as sale of rod-caught fish is allowed poaching will continue. Unfair to fishermen, &c.

7. Burden of proving legal capture to be on persons in possession, 36 & 37 Vic., c. 71, section 19, and read with 55 & 56 Vic., c. 50, section 3.

Have been valuable in stopping in England illegal dealings.

8. Certificate of origin.

Declaration made before magistrate or other responsible officer.

9. Refrigerators and cold or chilled stores.

Power of entry; returns to be made of fish entered and given out to an officer appointed by the District Fishery Board. Inspectors of Fisheries.

Increasing trade is likely to leave a serious effect in salmon fisheries if not conducted in strict principles as has been commenced in England and Scotland. Under these regulations it is against poaching, as the trader can obtain salmon all the year round as required without resorting to poachers, as formerly.

10. Regulations for sale of frozen fish to be sealed by Her Majesty's Customs, Fishmonger's Company or other duly authorised officer or officers appointed for that purpose by the Inspectors of Fisheries.

No salmon to be sold without being sealed (during close time) or accompanied by a duly authenticated certificate of origin.

11. Powers to inspect Parcels Post.

This is becoming a serious menace to the industry, especially having in view the contemplated increase of weights by the postal authorities. Salmon are even now cut up and sent through the post. (See "Carriage of Game" Bill.)

12. Young of salmon or smolts to include all fish of the salmon or trout genus or hybrids under eight inches, *vide* Pollen Fisheries Act, 1891, 54 & 55 Vic., c. 20. Would be the means of keeping down disputes as to kind of fish, and a size limit would prevent the sale of very small fish as have been sold.

13. Power to detain all the year round under similar powers of English Act, 55 & 56 Vic., c. 50 (1892), and compulsory branding. This Act, however, limits the time between 3rd September and 1st February, both inclusive, and which should be extended.

The working of the English Act, even in its present limited powers, has practically killed poaching in England and Wales as compared with what took place prior to its enactment.

14. Offenders may be prosecuted at any place where illegal fish are found and by any person.

Out of Ireland there is no jurisdiction. In the several cases in which the company has prosecuted, it has been necessary to take proceedings in the name of the Fishery Board in the district in which the salmon were caught. At present witnesses can be summoned from Scotland to England and *vice versa*, but not from Ireland.

Therefore Irish offenders who send poached fish to England get off unless prosecutions are instituted against them, at a very heavy cost for witnesses, &c., in Ireland, and as English local authorities have no power to spend their funds out of their own district, it places a premium on poaching and is an injustice in Irish fisheries.

Summary Jurisdiction Act, 44 & 45 Vic., c. 24.

Endorsement service and execution of process of English Court in Scotland and *vice versa*.

15. Enact powers similar to Sea Fisheries Regulation Act, 51 and 52 Vic., c. 54, so far as it applies to boards of conservators

This has worked well in England, and is required in several rivers in Ireland. I believe the Shannon Conservators have had to pass a bye-law recently having a similar object. The real object of fishing for sea fish in estuaries during the close season for salmon is to catch salmon, and not sea fish, in nearly every case.

(*a*) 54 and 55 Vic., c. 37; section 10 (1891). Power to local authorities to contribute to expenses of boards of conservators similar to power relating to sea fisheries.

(*b*) Government grants, 51 and 52 Vic., c. 54, sections 8 and 10.

16. Protect fish; create and sustain natural spawning beds.

17. Assist hatcheries (where found desirable).

18. Control regulations for taking ova and sale of young fish. To prohibit indiscriminate stripping source of profit.

Experience has shown that fish are stripped by owners of hatcheries, and thus prevented from spawning naturally, and are afterwards made a source of profit. This is done in England under a clause permitting this to be done for "scientific purposes;" but fish hatching is no longer scientific. That is to say, it has reached a stage where it becomes a business for profit.

19 Protection of coarse fish, subject to special powers to keep down where waters are frequented by game fish.

The poacher is maintained to some extent by coarse fish, both in and out of season, and the excuse to fish these enables him to leave nets in his possession to take salmon or trout. If these fish were protected, they would become a source of large income to Ireland, both as regards food supply and profit.

XXXVII.

Document put in by Captain Hall.

(See the Evidence of Captain Hall, q. 840, et seq).

INLAND FISHERIES—LIMERICK DISTRICT.

Rules to be observed by Water Bailiffs.

In the Tideway.

1. All engines for taking salmon or trout to be duly licensed.

2. The production of licences to be demanded from every person having a net or other engine in his possession in or near a fishing-place.

3. Nets not to be used at the mouth of any river where the breadth of such mouth shall not exceed a quarter of a mile, statute measure, or within half a mile seaward, or half a mile inward of such mouth.

4. No draft or snap net to be used with a mesh of less size than one and three-quarter inches between knot and knot, on each side of the square, or seven inches all round when wet.

5. The weekly close time to be strictly enforced from 6 o'clock on Saturday morning to 6 o'clock on Monday morning. Fixed engines to have during said time a clear opening of at least four feet in width, from top to bottom, in the pouches or traps thereof.

6. Nets for taking salmon or trout are not allowed to be on board boats from the mouth of the Shannon to Wellesley Bridge, in the City of Limerick, between 9 o'clock on Saturday morning and 3 o'clock on Monday morning, or in the tidal parts of any river flowing into same, or between Wellesley Bridge and the Navigation Weir at Killaloe, in the County of Clare, between 8 o'clock on Saturday morning, and 4 o'clock on Monday morning.

7. No drift net to be used of more than 100 yards in length between Limerick and a line drawn across the Shannon below Askeaton, from Aughnish Point to Kildysart, nor of more than 200 yards below that line, or in Clonderlaw Bay, and no drift net shall be used in that bay above a line drawn from Knock to Lacknabahee. No two or more drift nets shall be attached together in any way, or allowed to drift within 150 yards of each other, in the River Shannon or Clonderlaw Bay, nor shall any such nets below or seaward of a line drawn across the River Shannon from Aughnish Point, in the County of Limerick, to Kildysart, in the County of Clare, within the line of low water of ordinary spring tides.

No drift nets shall be used in the River Maigue or Askeaton, nor in the tidal parts of River Fergus.

8. Draft nets, or any other net used as a draft net, prohibited from the 1st of August to the 1st of November in each year in the River Shannon between the Lax Weir and a line drawn due north and south across said river at the Western extremity of Graigue Island

9. Nets not to be used between Wellesley Bridge, Limerick, and the Railway Bridge between 1st of June and 12th February,

10. When a drift net is suspected of being over length as regards the place where used it should be carefully measured.

11. When one net is being used, and another lying in the boat, both are liable to licence duty.

12. No means or device of any kind, such as cords or ropes, &c., shall be attached to the doors of stake or other fixed nets, so as to allow of their being opened or shut from the shores or banks of the river.

13 Fixed nets not allowed to extend further out than the low water of ordinary spring tides, or to be used without a certificate from the Inspectors of Fisheries.

14. The taking of salmon fry or the fry of eels is prohibited

15. It is illegal to attach movable nets to stakes or anchors, or make them stationary in any way, even by holding them so. All such should be seized.

16. All nets should be removed from weirs and from the vicinity of rivers during the annual close season.

17. The names and addresses of the owners of boats should be painted thereon, in a conspicuous place, in letters of not less than two inches in length. This applies equally to the fresh water.

Fresh Water.

1. All nets and rods and cross-lines to be duly licensed, and no single salmon-rod shall be used by any person except the person whose name and address are written in the licence.

2. The observance of the weekly close time between 6 o'clock on Saturday morning and 6 o'clock on Monday morning to be strictly enforced

3. No net, except a landing net for taking salmon or trout, to be used between 8 o'clock in the evening and 6 o'clock in the morning, except when heretofore used on a several fishery next above the tidal flow.

4. Sec. 49 of the 13 and 14 Vic., cap 88, prohibits the use for taking fish at any season of the year, in any fresh water, river or lake, of any otter, lyster, spear, dree, draw, strokehaul or gaff, except where the latter is used solely as auxiliary to angling with rod and line, or removing fish from a legal weir.

5. The use of lights or fires is strictly prohibited. Having such in or on the banks of any river between

sunset and sunrise, or any spear or gaff or other such instrument, with intent to take fish, subjects the offender to a heavy penalty.

6. Particular attention should be paid to eel weirs. Eel weirs should in every instance have a free gap in the deepest part of the river, and of a width of not less than a tenth of the breadth of the river in its lowest state, and not less in any instance than three feet. This gap should be carefully inspected in order to have it kept clear of all obstruction.

7. It is illegal to hang eel nets in the eyes of weirs between sunrise and sunset.

8. It is illegal to attach nets to stakes, sluices, lock gates of canals, bridges, or other such fixtures, or use nets for any fish except eels during the close season for salmon.

9. Mills should be particularly attended to, so as to allow no kind of fishing, except with single rod and line, in mill-streams, or within 200 yards of a mill weir, above or below same.

10 Mills must have a grating, with bars of not less than two inches apart, at the upper and lower ends of the water-course, and during the months of March, April, and May a wire lattice sufficiently small to keep fry from entering must be placed over such gratings. These provisions apply in every instance, except when the owner of a mill is exempted by the Inspectors of Fisheries. The water wheels of mills must be stopped for twenty-four hours between 6 o'clock on Saturday evening and 6 o'clock on Monday morning.

11. It is illegal to allow poisonous liquid or matter to flow into rivers or lakes, or throw into such rivers or lakes lime spurge, or other poisonous matter, or steep in such rivers or lakes hemp or flax, or have any poisonous or destructive matter in possession on the bank or near any river under such circumstances as shall satisfy the Court that the person had employed, or was about to employ, such destructive matter for the destruction of fish or capture thereof, and any person found taking from any river or lake fish wilfully poisoned is liable to prosecution.

12. Taking, injuring, or disturbing spawning fish, or fish on the spawning bed, is a serious offence, and, therefore, particular attention should be paid to the protection of such places.

13. Penalties are prescribed for taking or fishing for, or aiding or assisting in taking, or fishing for salmon or trout in the close season, and any person buying, selling, or exposing for sale such fish, or parts of such fish, is liable to such penalties, and such fish or parts of such fish may be seized.

14. All nets shall be removed or carried away from the banks of the rivers, or the vicinity thereof, during yearly close season.

15. The names and addresses of owners of boats should be painted thereon in a conspicuous place, in letters not less than two inches in length.

(*a*) The use of all nets, except landing nets as auxiliary to angling with rod and line, is prohibited for the capture of salmon or trout in that part of River Deel situate between Broken Bridge and mouth of river as defined.

(*b*) Nets not exceeding twelve yards in length, with meshes of one inch from knot to knot, for taking fish other than salmon or trout, are permitted in Lough Derg.

Prohibiting the use of all nets (except landing nets as auxiliary to angling with rod and line) for the capture of salmon and trout in that part of river situate between Broken Bridge and the mouth of river, as defined.

Nets are permitted in Lough Ree having a mesh of five inches in the round when wet.

Nets for taking salmon or trout in the River Cashen, in the County Kerry, are permitted with a mesh of one and a quarter inches from knot to knot.

Fishing for salmon or trout, by any means whatsoever, within a space of fifty yards below the Mill Weir at Ballyclough, on the River Mulcaire, is prohibited, or within a space of twenty yards from the weir wall at Ennis, on the River Fergus, or within a space of twenty yards from the weir wall at Tarmonbarry, on the River Shannon.

Shooting fish in the River Maigue, or in that part of River Shannon between Portumna Bridge and Shannon Bridge, is prohibited.

All nets, except landing nets as auxiliary to rod and line, are prohibited in the River Maigue above Railway Bridge below Adare.

The use of draft nets is prohibited in that part of the River Maigue between a line drawn across said river at the southern boundary of the townland of Ballycasey in the west, in an easterly direction, to the opposite shore on the townland of Clonanna and the old bridge of Adare, all in the County of Limerick.

Beating the water in the River Feale, or throwing stones or other missiles therein, is prohibited.

15. Water bailiffs are empowered, at all times and seasons, to enter into and pass through or along the banks or borders of any lakes or rivers, and to enter upon all rivers and lakes, and upon all weirs, sluices, mill dams, mill races, or water-courses communicating therewith, and examine same, and all boats engaged in fishing, and to examine nets of every description, and seize all illegal nets or engines, instruments or devices, and all legal ones when used illegally.

J. B. ALTON.

March, 1891.

XXXVIII.

Letter from Mr. HARRISON CRIPPS, F.R.C.S., with reference to Angling at Castleconnell.

2, Stratford place,
Oxford-street, W.,
London,
November 25, 1899.

DEAR SIR—I see in *The Field* that the Commission is inquiring into the salmon fishing of Ireland. I am afraid it would be impossible for me to come over and give evidence just now, but, if necessary, I might do so. I hold, on lease, the rod fishing of two of the largest fisheries at Castleconnell, on the Shannon—"Prospect" and "Newgarden,"—and since I have fished this water every year for thirteen seasons, I think you will recognise that I am not speaking without good knowledge. I pay £500 a year rent on lease, and employ four men on the water. Owing to the steady falling off in the fishing, my water has become almost valueless—indeed so much so that this year it was not worth fishing and I did not go over. In the present state of affairs, when my lease terminates four years hence, I would not renew at as many shillings as I now pay pounds. I have constantly observed my water and the habits of the salmon, and have no doubt as to the chief cause of the scarcity of fish.

The grilse or peel, as they are called at Castleconnell, only run for a very limited period—from about the middle of June to the middle of July. The whole future supply of salmon in the following years depends on the number of grilse that get through the nets into the river. If the water should be at a low summer level, as it has been for the last few years, owing to the narrow gut through which the main stream has to pass in a portion of the Limerick District, practically every grilse is stopped and killed in the nets. Of recent years, when the water has been low, and when I have been fishing in the last week of June and the first of July, day by day, I have hardly seen a grilse in the whole of my water, which was almost entirely barren of the young fish, while at the same I would be reading of large quantities taken in the Limerick nets below. It appears to me, even apart from the angling interests, to be a suicidal policy for the netsmen themselves to continue this wholesale slaughter of the grilse. Their weight would not average above 3lbs. or 4lbs., and their value in the market at less than 1s. per lb. These same fish, if allowed to get through, would be supplying salmon from 10lbs. to 40lbs. in the spring of following years; not only would they be five and six times the weight, but their value as spring fish in the market would be certainly double that of the grilse. Another cause of the failure of a fair proportion of these fish to get through is the mismanagement of the weekly close time. This close time is two days in the week—Saturday and Sunday; but owing to the great length of the netting district of the Shannon, this does not give time enough for the fish to get through; those that escape the nets in the lower reaches on Saturday and Sunday are caught in the upper reaches by the nets on Monday and Tuesday. I would make the following suggestions:—

1. That the weekly closed time should be altered so as to be Saturday and Sunday in the lower half of the Limerick District and Sunday and Monday in the upper half.

2 An absolutely close time for grilse, all netting and angling being stopped for the last ten days of June, or considering how comparatively small is the number of grilse killed by the rod that the upper proprietors should, if angling were permitted during these ten days, give up in exchange the last two months of the season, namely, September and October, at which period the fish are but poor sport for angling purposes.

I trust, sir, you may be able to give some consideration to the suggestions I have made.

Yours truly,

HARRISON CRIPPS, F.R.C.S.

To the Secretary of
Fishery Commission, Dublin.

XXXIX.

DOCUMENTS put in by Mr. GEORGE H. T. BEAMISH, C.E.

(See the Evidence of Mr. BEAMISH, 2226 et seq.)

(1).—INTERNATIONAL FISHERIES EXHIBITION,

TO BE HELD IN THE CITY OF EDINBURGH, 12TH APRIL, 1882.

CAIL'S "LOCK SWIMMING SALMON PASS."

(DESIGNED 1864).

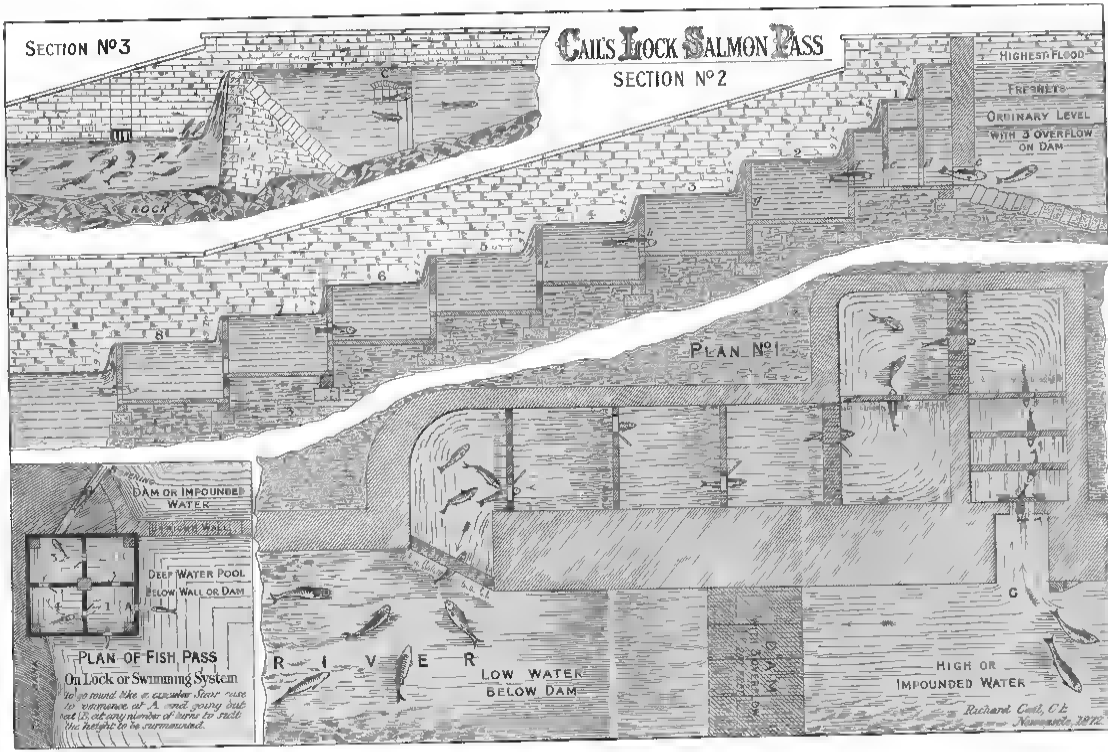
To have any Salmon in rivers, and to continue their breeding, it is absolutely necessary that the male and female Salmon should have access to the gravel beds in the upper parts, above the tidal flow, in which they can deposit their eggs or ova for hatching.

To make rivers prolific, where dams, weirs, or natural obstructions exist, which fish cannot easily surmount, is impossible, and means called "Fish Passes" must be provided to enable the heavy-laden fish to pass beyond them to the gravel beds, the strong natural instincts of the salmon leading them to go up any flowing water when they are stopped by a fall.

The natural laws which regulate the flow of water being fixed and unalterable, "Fish Passes" *ought to be constructed in conformity with these laws.* The drawings and models exhibited *are so*, and can be constructed to suit every situation, height being no object to 100 feet or more.

The means to accomplish this can be cheaply made of deals or concrete, easy of execution, and worked with a small supply of water, which in many cases is an object where milling power is required.

To carry this system out, as explained by the models, plans, and sections, the water below the dam or obstruction (whatever the difference of height to be overcome) is connected by a system of continuous Locks or Chambers, of say 6 feet square by 3 feet deep, communicating with each other by apertures for the passage of the fish up, and water down, and so arranged in size as to keep each Lock always full and slightly



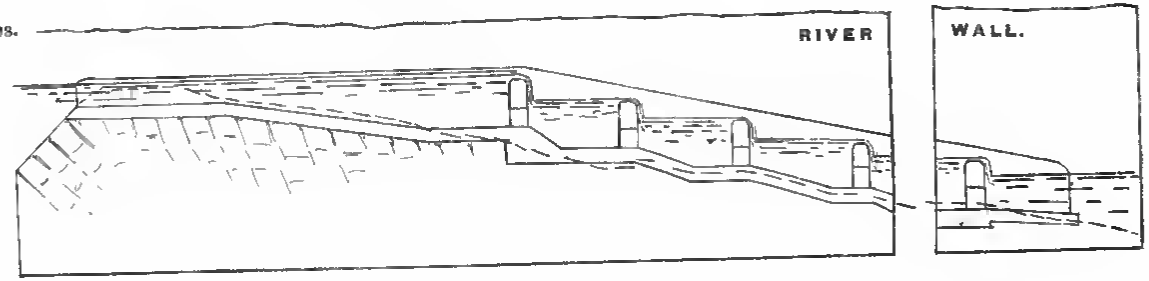
IMPROVED LOCK FISH-PASS.

Modified from Pass Designed and Exhibited by RICHARD CAIL, C.E., 1872-'83, &c.

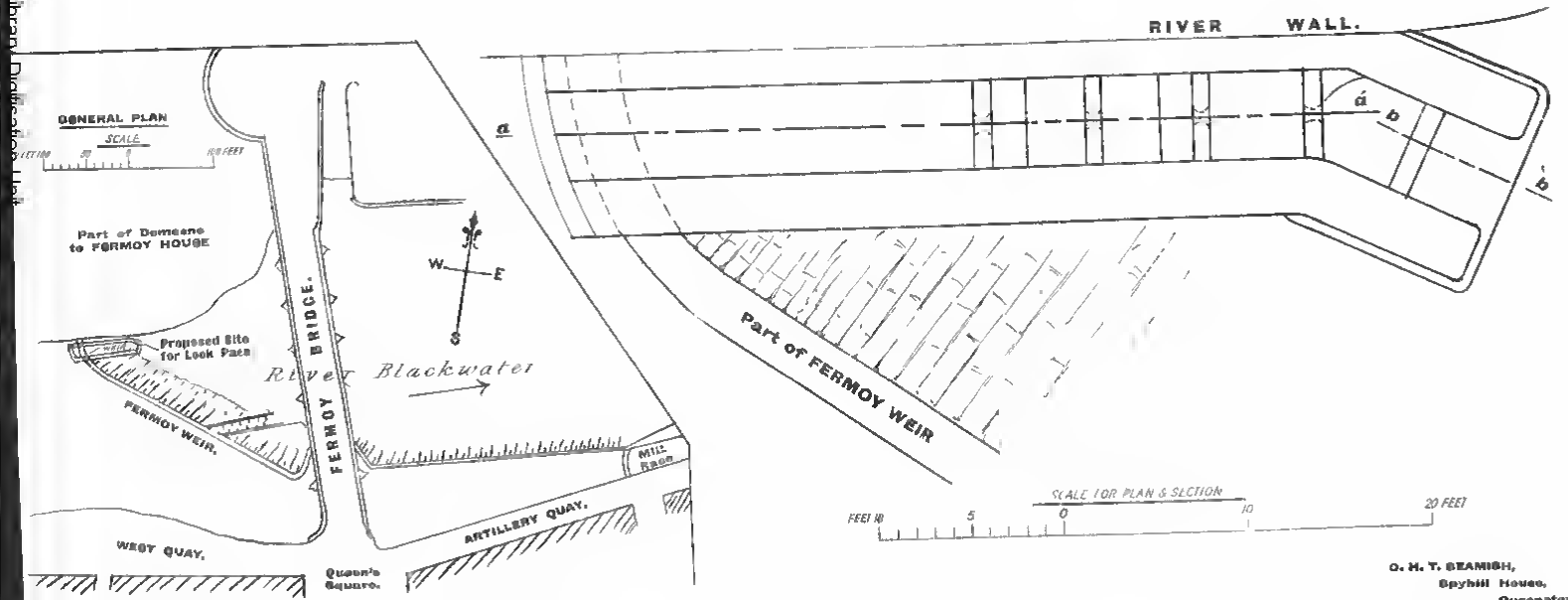
Adapted to FERMOY WEIR, Co. Cork, by C. H. T. SEAMISH, Asso. M.I.C.E.,

Queenstown, Nov., 1898.

SECTIONAL ELEVATIONS. *a, á.* *b, b.*



PLAN.



C. H. T. SEAMISH,
Spyhill House,
Queenstown.

Nov. 30th, 1898.

overflowing, by which means Salmon *easily swim through* the Pass and surmount an obstruction of any height without strain or exertion, as they are always in solid or unbroken water, coming down at a slow speed, and have no occasion to leap.

MODEL No. 1.

Shows the system with a Pass with an open top which can be made with the cheapest material of the locality, deal, concrete, or masonry.

The opening at the top, which forms the exit for the fish and also feeds the Pass with water, is made below the water line, and a short distance above the fall or obstruction, and clear of matter brought down by floods, and is so regulated to the size required that the Pass cannot be flooded, the exit for the water and entrance for the fish being where the fish congregate below the fall. Fish and water being of the same specific gravity, it is immaterial to them whether they swim up, down, or longitudinally, in still water.

By connecting the high and low water together, as shown by a continuous body of unbroken water, which can be done by taking the Pass in any direction, where it will be the least cost to suit the ground, however great the difference in level, as provided by this invention, there is no rushing, falling, or broken water, fish can *swim up* to any height—for instance, say to surmount 50 feet by 40 Locks, or 100 feet by 80 Locks, each rising 15 inches—and can swim up with much greater ease than a man can walk up a hill or the same height by stairs, as a man has to raise the full weight of his body in air, whereas the fish is in an element the same weight as itself and has no weight to raise, and swims from Lock to Lock like a ship in the Locks of a Canal, but without the loss of time by gates; and swimming at 2 miles an hour through a Pass on this sytem, surmounting 50 feet in height, would be through in 3 minutes.

However high the fish have to ascend to surmount an obstruction, they have only to pass through a slight current for about a foot in length, in going through the apertures from Lock to Lock, due to the small difference in the head or water level between the adjoining Locks of 15 inches, and in no case exceeding 18 inches; hence, by the sub-division of the total head, or height to be ascended, the force of the water at the openings is so very small, whilst all the other parts of water in the Locks are purling slowly round, or quiescent; therefore it will be seen, by reflection, that the height to overcome is of small importance.

When fish are going through the Pass, they have as much or more ease in the Pass as in the river, as the speed at the apertures is about 3½ miles an hour for one-sixth of the distance, and not one mile an hour for the remaining five-sixths; and they can rapidly swim up into the high or impounded water, and away to the gravel beds beyond.

MODEL No. 2, Circular Stair Swimming Pass.

This Model of a "Fish Pass" is designed for Rocky Glens or confined situations. It is made to scale of two inches to a foot, and is also shown by a plan and elevation on the drawing, and is on the same principle as No. 1 in all respects.

By the adoption of this means, places hitherto thought impracticable to surmount can be ascended with the greatest ease.

By these methods every obstruction in rivers or falls can be overcome, and every suitable breeding ground can be made available, to the benefit alike of the Riparian Owner, the Fisherman, and the Public.

MODEL No. 3

Is a Circular Stair Swimming Pass on a small scale, on the same design as No. 2 Model.

MODEL No. 4

Is a short piece of a Pass to show a mode of construction when made of deals, is one-quarter size, or 3 inches to a foot. The large drawing shows a Plan, Section and Elevation of a Pass, on a scale of 1½ inches to a foot.

I will be glad to explain the Models and Plans to any who desire it, and particularly invite the closest inspection by the scientific.

RICHARD CAIL,

NEWCASTLE-UPON-TYNE, *April*, 1882

XLI.

Documents put in by the Secretary.

(1).—Rainfall in Ireland, 1895–1899.

Table showing the Average Total Rainfall in Ireland for the Years 1895–1899.

Averaged from the recorded rainfalls at the following Stations:—Armagh, Parsonstown, Dublin, Killarney Derry, Sligo, and Valencia.

Year.	Average Rainfall.
1895, . . .	37·6735 inches,
1896, . . .	42·3045 „
1897, . . .	42 4181 „
1898, . . .	40·6241 „
1899 . . .	41·6451 „

(2).—Export of Salmon and other Fish from Ireland 1893–1898.

Table showing Estimated Value of Salmon and other Fish exported from Ireland for the Years 1893–1898.

Year.	Salmon.	Other Fish.	Total.
	£	£	£
1893, . .	492,281	291,366	783,647
1894, . .	572,925	363,634	936,559
1895, . .	574,828	359,955	934,783
1896, . .	575,091	370,793	945,884
1897, . .	522,047	380,563	902,610
1898 . .	490,473	347,116	837,589

Note.—The above figures are calculated on the following prices:—

Salmon	...	...	...	1s. 3d. per lb.
Herring	...	...	...	£1 per cwt.
Mackerel	...	...	...	10s. 6d. per cwt.
Cod	...	...	...	£1 10s. per cwt.

The result is, in point of fact, rather over the true value in 1898; but the prices are maintained throughout the table to show the fluctuation in quantity, more than in value.

(3).—TABLE showing (on Ten Selected Fisheries) their Valuations, and the Amounts and Per-centages of Rates raised thereon for Fishery Preservation, and also for purely County purposes.

District.	Fishery.	Designation.	Owner.	Valuation	Gross Amount of 10 per cent. Rate	Value of Licences Issued	Net amount of Rate for Fishery purposes	Net Per-centage.	Amount of Rate for County purposes.	Percentage of County Rate	Total Percentage paid on Fisheries.	Remarks
				£ s. d.	£ s. d.	£ s. d.	£ s. d.		£ s. d.			
1. Ballina,	Moy.	Tidal water, Fresh water.	Moy Fishery Co.,	2,420 0 0 130 0 0	255 0 0	189 0 0	66 0 0	2·59 per cent.	464 13 9	18 per cent.	20·59 per cent.	—
2. Killarney.	Killorglin,	Laune tidal, Caragh Lake. North side of R. Maine.	Messrs. Power and Dodd.	475 0 0 27 0 0 5 0 0	50 14 0	45 0 0	5 14 0	1·12 „	200 0 0	39·4 „	40·16 „	—
3. Ballycastle.	Bush,	Bush Sea Fishery, Bush River Fishery. Portbradden,	Sir F. Macnaghten,	270 0 0 65 0 0 120 0 0	45 10 0	42 0 0	3 10 0	·77 „	35 12 3	7·9 „	8·67 „	—
4. Limerick.	Lax.	—	J. A. Place and others.	400 0 0	40 0 0	186 0 0	Nil.	Nil.	126 5 10	31·58 „	31·58 „	Licences higher than 10 per cent. rate.
5. Waterford.	Inishogue,	—	E. K. Tighe.	104 0 0	10 5 0	13 0 0	Nil.	Nil.	9 15 0	9·37 „	9·37 „	Licences higher than 10 per cent. rate.
8. Drogheda.	Old Bridge,	—	Lt.-Col. Coddington.	150 0 0	15 0 0	15 10 0	Nil.	Nil.	30 0 0	20 „	20 „	Licences higher than 10 per cent. rate.
7. Londonderry.	Foyle.	—	Foyle and Bann Co.	2,510 0 0	251 0 0	159 0 0	92 0 0	3·67 per cent.	604 8 8	24 „	27·67 „	—
8. Coleraine.	Bann.	—	Do.,	1,510 0 0	153 0 0	56 0 0	103 0 0	6·82 „	294 8 7	13·6 „	20·42 „	—
9. Sligo.	Sligo,	—	Col. H. Cooper,	500 0 0	50 0 0	9 0 0	41 0 0	8·2 „	135 0 0	27 „	35·2 „	—
10. Galway.	Galway,	—	T. Hallett.	1,000 0 0	100 0 0	90 0 0	10 0 0	1 „	183 8 8	18 „	19 „	—

Gross Valuation of above Ten Fisheries,	£9,756 0 0
Net amount (plus the cost of collection) available for Fishery purposes,	£321 4 0
Net amount (plus the cost of collection) available for County purposes.	£2,033 6 9
Average per-centage of rate collected on above Fisheries for Fishery purposes,	3·29 per cent.
Average per-centage of rate collected on above Fisheries for County purposes,	21·36 „
Average per-centage of total rate on Valuation of above Fisheries,	24·65 „

Gross Valuation of Salmon and Inland Fisheries for Rating purposes,	£26,192 6 0†
Gross amount of 10 per cent. duty on above.	£2,619 4 7
Amount actually credited to the funds of Boards of Conservators.	£343 7 10‡
Actual per-centage on Gross Valuation credited to funds of Boards of Conservators as per last item,	3·23 per cent.
Amount of the 10 per cent. duty absorbed by Return on Licences, Cost of Collection, &c.,	£1,770 16 9
Amount received by Boards of Conservators in Licence Duties,	£12,749 0 0§
Total amount available for Inland Fisheries,	£13,597 7 10

* From the per-centages in the columns marked * must be further deducted the cost of collection.

‡ H. M. Inspectors of Irish Fisheries, 1899.

† H. M.'s Commissioners of Valuation, 1900.

§ H. M.'s Inspectors of Irish Fisheries. 1899

1898. (4).—Table showing General Income and Expenditure of Irish

RECEIPTS—	£ s. d.	£ s. d.
Balance in Hands from 1897,		7,436 11 4½
Income in 1898 from all sources, except fines,		12,491 7 0
Fines recovered during 1898 (*including sale of gear seized*)—		
Dublin,	11 10 0	
Wexford,	8 16 9	
Waterford,	69 11 8	
Lismore,	87 5 2	
Cork,	4 6 2	
Bandon,	14 13 6	
Skibbereen,	4 13 0	
Bantry,	5 13 1	
Kenmare,	24 0 0	
Killarney,	9 17 0	
Limerick,	198 8 10	
Galway,	—	
Connemara,	—	
Ballynakill,	4 0 0	
Bangor,	1 6 8	
Ballina,	19 14 1	
Sligo,	3 14 8	
Ballyshannon,	15 6 10	
Letterkenny,	18 6 8	
Londonderry,	52 19 10	
Coleraine,	43 6 2	
Ballycastle,	24 7 4	
Dundalk,	1 6 6	
Drogheda,	0 15 0	
		624 12 2
		£20,552 10 6½

FISHERY BOARDS, specially in connection with Prosecutions. 1898.

EXPENDITURE—	£ s. d.	£ s. d.
General Expenditure in 1898, except for Prosecutions,		12,343 8 7
Expenditure in connection with Prosecutions—		
Dublin,	4 10 0	
Wexford,	54 0 11	
Waterford,	83 10 10	
Lismore,	95 16 11	
Cork,	10 7 2	
Bandon,	14 15 1	
Skibbereen,	26 12 0	
Bantry,	—	
Kenmare,	9 15 3	
Killarney,	65 9 2	
Limerick,	392 12 10	
Galway,	2 12 0	
Connemara,	—	
Ballynakill,	9 4 0	
Bangor.	11 11 2	
Ballina,	28 3 1	
Sligo,	10 3 6	
Ballyshannon,	12 0 0	
Letterkenny,	24 16 10	
Londonderry,	35 15 0	
Coleraine,	105 8 8	
Ballycastle,	6 13 6	
Dundalk,	0 9 0	
Drogheda,	—	
		1,004 6 11
Balance carried to 1899,		7,205 17 9½
		£20,552 10 6½

XLII.

MEMORANDUM put in by Mr. HOLT, Scientific Adviser to the Fisheries Branch of the Department of Agriculture and Technical Instruction, as a Supplement to his Oral Evidence before the Commission on September 10th, 1900.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

17.ix.'00.

DEAR SIR,—When giving evidence at the last public sitting of your Commission I accidentally omitted some notes, which I forward herewith. I should like to add that nothing in my remarks about the destruction of salmonidæ by mackerel nets was intended to be taken as casting discredit on the statements on this subject which have been made to your Commission by eye witnesses.

I am, dear Sir,
Your obedient servant,
ERNEST W. L. HOLT.

To the Secretary,
Irish Inland Fisheries Commission.

DESTRUCTION of SALMONIDÆ in the Sea by methods other than Mackerel Fishing.

Moored Nets.—White trout, and probably salmon, are occasionally taken, as I am informed, in nets moored in Castlehaven for pollock, &c. I understand that trout are so caught at all seasons of the year, and in this year some were so caught in January. My informant is Mr. T. Leary, of Castletownshend.

On the 18th March of this year I caught two white trout in nets moored at the head of Fahy Bay, Ballynakill, and another in the same place on the 3rd April. The two first were slats, but the last was in perfect condition. At the head of this bay are two small streams or ditches, at the mouth of one of which migratory salmonidæ are occasionally left, according to local report, by spring tides. It is probable that wherever the practice prevails of mooring nets for coarse fish about the mouths of streams a certain amount of salmonidæ are caught.

Herring Nets.—At Cleggan the summer herring fishery with drift nets was not prosecuted with much vigour this year. I do not know whether any salmonidæ were caught. No herring drift nets are owned at Boffin except by the Marine Laboratory. At the end of June I lent a few nets to a Rusheen fisherman, who caught eight white trout in them the first fishing night, 27th June. Five of them were very small, and appeared to be in the grilse stage of their kind; whereas all the trout caught in the mackerel nets seemed to have spawned in the preceding winter, or were at least large enough to have done so. This man had few further opportunities of fishing, and up to the end of July had caught no more trout, and practically no herring.

A small boat which I fitted out with drift nets for herring fishing from the west end of the island caught seven trout in the second and third weeks of June. I have no other evidence of the effect of this method of fishing on salmonidæ.

Line Fishing.—A large white trout was taken on a spiller, baited with mackerel, off the Stags of Boffin on the 31st May. It may, of course, have taken the bait either ascending or descending, and was in very poor condition. Two large trout have been taken at Boffin this year on eel-baits towed for pollock.

XLIII.

MEMORANDUM put in by Mr. T. G. P. HALLETT as a Supplement to his Oral Evidence before the Commission at Galway, on June 8th, 1900.

I further wish to state (in addition to my oral evidence)—"That in putting forward the idea or theory of a prevailing deficiency of rainfall as a cause of the decline of salmon, I would desire to draw a marked distinction between the application of this idea to the Galway river, and its possible application to the rivers of Ireland and the United Kingdom in general. As regards the Galway river, the prevailing deficiency of rainfall during the past ten years, and to some extent the last fifteen years, has been a matter of direct personal experience, and its injurious consequences on salmon production has also been similarly experienced. The facts already evidenced, viz.:—the successive years of deficiency of water in the angling "drain" at Galway, attended by a corresponding deficiency in the angling "catch," and the successive years of deficiency of water in the Claregalway river—the chief upper river of the fishery—owing to its absorption by the "swallow" holes and underground passages of the limestone; these two sets of phenomena have formed two very complete water-gauges for measuring the deficiency of rainfall in the fishery district. Though the "swallow" holes continually carry off water they only empty the river when the rainfall fails. The amount of water in the river is, in fact, the balance between the amount supplied by the rainfall and the amount carried off by evaporation and the "swallow" holes. These two gauges, one at the mouth of the river, and the other in the chief river of the upper waters, may be fairly taken as measures of the rainfall of the whole catchment basin. The destruction of fry that has visibly occurred in repeated years of drought over four or five miles of river bed left dry, is some indication, too, of the injury that must have occurred in other parts of the river basin by the lowered amount of water supplied to it. The damage to the fishery in one year from such a cause must be severe; but when the cause is cumulative through a series of years the cumulative effect of such damage must be exceedingly severe. When, further, it is realized that the deficiency of water intensifies every other evil to which a salmon river is subject, when it is considered that abundance of water is the great protector of fish from poachers, from difficulties of migration, from pollution, from destruction by birds and other enemies, that it is the condition of an extended spawning area and of an abundant food supply it will be admitted how effective a series of droughty years must have been in pulling down the productive capacity of the river.

Such are our positive experiences as regards Galway. How far the causes here observable can be extended

to other rivers of Ireland and the United Kingdom is a question of how far the drought that has been visible here can be proved to have extended to other rivers. In so far as rainfall statistics show years of drought in these rivers—and these statistics appear to indicate a cumulative drought throughout the nineties over the United Kingdom, amounting to a large mean annual deficiency as compared with the eighties—so far is the theory of a deficiency of rainfall as a cause of the deficiency of salmon in general rendered probable. It may, moreover, be suggested that in estimating the effect of rainfall on salmon rivers, account is to be taken not only of the quantities in successive years, but also of the distribution through these years. This distribution of rainfall has been peculiarly irregular of late years. According to a chart of rainfall since 1875, extracted from Symons's Annuals, 1887 and 1893 are by far the worst years for Ireland as a whole, and 1889 is very bad. A year of very high rainfall, producing floods is no compensation as regards the production of salmon for the evils of a preceding very low year of drought. A flood-producing rainfall may be injurious as regards the spawning beds, and, further, the drought preceding it may have lowered the breeding stock of the river Thus great irregularity, apart from diminished quantity, is in itself an evil.

There is one important question connected with the effect of drought at the mouths of rivers which may be noticed. It has been said as regards Galway that when, owing to drought, the fish cannot get up past the tidal waters they are all "raked out" by the nets, and hence the nets must be put off, &c., &c. Not the slightest proof of this proposition is adduced, or is apparently thought necessary; but it has a look of plausibility about it and coincides with certain forms of popular taste. It may be admitted that, other things equal, fish are more easily caught in the tideway in droughty years than when the river runs strongly. Indeed when the river runs very high and strong it is very difficult to catch fish at all in the tideway at Galway. But in droughty years other things are not equal, and as a matter of fact the accounts show that the best catches have not gone to the droughty years, but that some of these years in the nineties have been below the twenty-five years' average. We do not welcome a droughty year at Galway, even from a netting point of view, and, for this reason, the earlier shoals make the attempt to ascend, and many of their numbers are doubtless caught; but when the others find their efforts futile, through an absence of water, they fall back again into the sea, whilst later shoals, that in a good season of water would have come up, do not apparently make the attempt to come up at all. These fish that fall back or do not come up are usually said to move about in the sea and come up in the autumn floods. This is probably true of many of them, but it is not true of all of them. When they fall back into the sea they fall back amongst their enemies—amongst seals, sharks, &c., &c. They have been running the gauntlet of these enemies on their way to the river and not without wounds and death to many of their fellows, as the lacerations on some of those actually caught show, but now in their slow and delayed retreat to sea they are exposed to the continued attack of these enemies on all sides, and are probably destroyed in large quantities. Many practical fishermen, in their difficulty to find a sufficient cause on land to account for the decline of salmon, have been driven to the assumption of "something in the sea," some increase it may be of the salmon's natural enemies. The difficulty of such an assumption is the absence of proof of its cause independently of the fact to be explained by it. But if it be granted, as it must be, that in years of drought the fish, being unable to get up the rivers, are forced to fall back to sea, and if it be granted, as it must be, that they thus fall back amongst their natural enemies then it seems to follow that these natural enemies in the sea—this "something in the sea"—thus aided by the drought will be a considerable cause of salmon destruction. To the question how long before drought in a river will affect the salmon supply it may be said that, as regards the destroyed fry, the consequences may not be felt for some years; but as regards the adult salmon destroyed at sea the effect begins to tell at once. A great drought thus acting adversely on salmon in all its stages from the adult stage *usque ad ovum* may manifest its injurious effects from the beginning and through many succeeding years.

With regard to the question of remedy for the salmon decline, if this decline is owing to a deficiency of rainfall the true remedy will be the increase of rainfall, and in the course of nature we may perhaps expect in future years an increase of rainfall up to its normal level. I have much confidence that, as far as Galway is concerned, with an improvement in rainfall and with due protection and care we shall have a corresponding increase of salmon.

With regard to the remedy of universally lessening the netting by one day or twenty-four hours in the week, I would suggest that such an interference with a commercial industry requires much more evidence and consideration than its promoters have yet given to it. In the first place the fact of a universal over-netting on which the remedy is based has never been proved, nor has it been ever submitted to any law of evidence worthy of the name. In the second place universal over netting as the universal cause of salmon decline is reduced to an absurdity by the number of instances producible in which the salmon decline exists where nets have been wholly eliminated. There are two or three cases of rivers on Galway Bay in which the nets have been taken off, and at least one of these is in a worse condition than some of the netted rivers. I am not of course in a position to affirm that no rivers are over-netted. There are fisheries and fisheries just as there are rivers and rivers, but the burden of proof I would submit rests on those who affirm general over netting as the cause of general decline and try to fasten upon it general restrictive legislation of twenty-four hours of diminished work in the week.

It may be pointed out that the Irish fishing week of five days is already less than the English and Scotch fishing weeks, and to cut out one day more would not only be a serious loss of time but a serious dislocation of an important industry.

Were the necessity of restriction proved it could hardly assume a more awkward form for a business than this. Not to speak of the plant and material of the capitalist lying idle, all his labour would be disorganized. He can scarcely be expected to pay five days' wages for four days' labour, and unless he pays in this proportion the fishermen and their families must suffer.

One prominent advocate of destroying one day's fishing labour each week would apparently exempt what he calls the "Sons of Toil" from his measures, but he appears to forget that the fishermen who work the nets of the capitalist are as much "Sons of Toil" as the fishermen who work their own. With this proposed legislative lockout and loss of wages to the fishermen must go a similar lockout and loss of wages to the carters, box-makers, packers, clerks, &c., whose work is dependent on the daily catch.

With regard to the Galway Fishery it may be proved beyond controversy that its netting has always been kept far below its legal powers. Our several fishery extends the whole length of the river from Lough Corrib to the sea, but our general practice has been to use nets only in the tidal waters near the mouth of the river. Had this fishery been divided up, like many other fisheries, amongst various owners, no doubt netting here as elsewhere would have extended more or less over the whole length of the river. But as sole owners we have always had a supreme interest in the stock of fish, and have acted on a different system. Nets are used

in the upper waters of Lough Corrib, but we have never exercised our right of netting our own upper waters unless the tideway flow has been practically unmanageable. My father-in-law, Mr. Ashworth, who, by his remarkable interest in and practical knowledge of fisheries, raised the Galway Fishery from very small beginnings to its past high level, had too strong a sense of the importance of an abundant stock of breeding fish to risk it by over-netting, and the fishery has always been carried on on his lines. What these lines were as regards hatcheries, obstructions, pollutions, protections, &c., all having reference to an abundant stock of salmon, are contained in his international prize essay on the subject of Salmon Fisheries.

With reference to mills at Galway, I gave evidence at length on this subject before the House of Commons Committee in the last inquiry on Irish Fisheries. The clause of the Act compelling millers to put up gratings at the outlets below their mills took its origin from Galway experiences, and was commonly referred to in the House of Commons inquiry as the Ashworth Clause. As a matter of fact we have always put up these gratings and maintained them at our own cost; but the clause as it stands, though imperfect, gives us a hold over the millers which enables us to secure a more efficient grating than the clause itself allows. Legislation as regards the intake of water above the mills for the protection of slats and fry is still much wanted. As regards the general question of salmon *versus* mills, there is, with proper care, room for both interests on our rivers. The salmon preceded the mills in time, and all that the salmon fisheries want of the mill owners is that in setting up their structures in rivers they shall not stop up the salmon's old right of way, and that they shall fence in their machinery so as not to destroy them as they pass It seems something scarcely short of the monstrous that men are to be allowed to set up dams, literally barring the way of fish whose migratory function is the condition of their existence, and, further, to set up dangerous machinery in a river, unfenced and unenclosed, constituting an elaborate trap-work for the destruction of salmon. Millers have been found to put forward the defence that as mills are much more valuable than salmon fisheries the fisheries must give way. The alleged fact on which this curious dogma is based is very questionable. It has been argued with some force that mills, as far as their water power is concerned, are not as valuable as salmon fisheries. The water power of mills is trifling as compared with their steam power, and it is the water power of mills as such which is the point in question. In Galway the alleged fact is sufficiently absurd, for here the Salmon Fishery pays more rates than all the mills, as water power values, put together. But even granting mills are more valuable than fisheries, it is difficult to understand by what right of equity they are therefore entitled to injure and destroy them A railway may be more valuable than the farm through which it passes; but it is not therefore entitled to run along an unfenced road and thereby destroy the farmer's cattle. It must fence in its system, and it must provide bridges and subways of free passage. The miller's claim to damage fisheries seems to be a claim to make his profit out of the loss and injury of another—a claim contrary to the first principle of jurisprudence—or, it would seem, of common honesty.

Similar considerations apply to the question of pollution, and here the law is more imperfect even, both as regards remedy and enforcement, than in the case of mechanical obstructions. We know that in England many salmon rivers have been literally destroyed by pollution, and with the spread of so called civilization a similar fate may attend Irish rivers unless the so-called civilization has power and intelligence enough to deal with the polluter according to just law

With regard to the important subject of police protection: as fisheries pay all ordinary rates and taxes it would appear that they have a primary and not merely a secondary or subordinate claim to police protection. In addition to ordinary rates and taxes they pay a special impost which, including special licences on what is literally their plant and instruments of production, amounts to 10 per cent. on their valuation.

I may, perhaps, be allowed to suggest that in this question of police protection, fisheries have suffered from the two points of view from which they may be regarded. Fisheries may be either purely sporting or purely industrial, or as at Galway and most of the larger fisheries, they are partly sporting and partly industrial. When fisheries claim police protection like farms or manufactories, it is said, "Oh, you are a mere sporting concern, and no sportsman wishes the police to protect his pheasants and partridges. Besides it might make the police unpopular." The tax gatherer and rate collector on the other hand regard the fisheries as industries, and demand their rates and taxes accordingly. In a large fishery the sporting aspect is a very minor matter as compared with the industrial one, from the point of view of rates and taxes. Such a fishery is, for the most part, a purely industrial operation; and seeing how sea fisheries, which are industrial operations, are protected by gunboats—the police of the seas—a fair claim may apparently be made for protection for inland fisheries by the police of the land.

XL

Document put in by MAJOR GEN. WOOLSEY.

MAP

SHOWING ARRANGEMENT OF MILL RACES ON RIVERS GLYDE AND DEE, EXPLANATORY OF EVIDENCE, WOOLSEY 4083-4105.

F Conduit under River Dee
E Weir on Glyde called The Inns Weir
G Weir on Dee called Willstown Weir
S Spot on which Sir Thomas Brady proposed to cut through embankment

XLIV.

MEMORANDUM put in by Mr. DINSMORE, J.P., supplementing his oral evidence before the Commisssion at Belfast, May 21st, 1900.

Oldgreen Woollen Mills,
Kells, Ballymena,
21/5/'00.

KELLSWATER—A tributary of the Maine River.

I believe I am the only millowner on Kellswater River who keeps ⅜ inch lattices at entrance to my turbines from 1st April to 1st June, and I have done so carefully for six years and upwards because the law required it. I did this at very considerable *cost and loss*. This river has *ceased* to be a salmon river to all intents and purposes for some years past, with the exception of the last mile before it enters "Maine." The ova and fry have no chance in the gravel beds, because the water (unless during floods, which only last a day or two) is withdrawn into the millraces, leaving them and the river bed dry and bare of water. Innumerable ducks, kept by the cottagers and small farmers on and near the banks, gobble them up, and even enter the millraces, and fish, head down, below the water in the bottom gravel for ova and the young alevins. Gulls, which used never to rest inland, are now constantly hovering near the river, evidently living on small fish, &c. The only fry now left in the river to pass down is that of the Lough Neagh salmon, locally called "dollaghan," which do not descend to the sea. The fry and smolts of the dollaghan resemble in their markings the true salmon of similar age, but want the silvery colour. In thirteen dozen fry and smolts, caught a year or two ago by a young friend on an occasion when the millrace was dried, through accident or necessity, there was only *one true salmon* fry in the lot; and this was during the season when the salmon should have been descending. At a weir close to my works, I have watched the fish ascending during autumn floods for forty or fifty years. Formerly there was about *one salmon to three* dollaghan; now they are *all* dollaghan. I have not seen a salmon running this weir for years; but no doubt there are a few—a very few. Besides, in a deep pool at foot of this weir, in which the fish must stay when the river flood suddenly falls off, there were hagfulls of dollaghans from two lbs. to five lbs. weight, which were ascending the river to spawn, brought out by poachers in August, September, and October last. This is effected year after year by *poisoning the pools with lime* taken from railway waggons, or from fields where it is being applied for agricultural purposes, freely in the autumn all over the district through which the river runs. I understand from eye-witnesses the take consists entirely of dollaghan for years past—no salmon. Similar pools on the river for many miles are similarly treated during autumn, with, I understand, a like result, showing for late years an absence of salmon. This river is at best but a mountain torrent, with a *fall of* 400 *feet in six miles* (see Ordnance Survey sheet), on which are fifteen mills driven by its water. The supply is irregular and intermittent, averaging full power seven to eight months in the year, and partial (30%) for the remainder. Flax water has done little injury to fish during the years 1898 and 1899, (1) because little flax is now cultivated in the neighbourhood, (2) because at the time the flax was being run off in both seasons named the river was in flood, and (3) many flax growing farmers have made arrangements to retain the flax water for liquid manure to the soil, or to escape prosecution. (Notices should now (about 1st June) be published that prosecutions would be issued against farmers allowing flax water to escape.)

The cause of the recent fluctuation of the water supply in this river compared to former years is that from fifteen to twenty-five years back *surface drains* were made over vast areas of the soft, wet, boggy moorlands in Glenwherry, which used to retain the water, and pay it out like a reservoir. The result of this draining is that the ground has become shrunken, and firm, growing *superior grass* and carrying *increased numbers of cattle and sheep*. *Field draining* of wet land by the farmers on the agricultural area has been going on with increased energy since 1881, inside the water shed drained by this river. In both cases the result is that the rain-fall hurries off the land at once, so that the freshet, instead of lasting for two three weeks as formerly, now *gallops off in a day or two*, leaving the *ascending fish stranded in the pools*. During the same period there has been a *great development* of the manufacturing works on the river, and consequently a larger proportion of the water of the river is withdrawn into the millraces than formerly to turn the additional machinery which has been introduced, and which gives employment to a large industrial population that lives in proximity to its banks. Consequently, during a drought in dry summers and autumns, and even during severe winter and spring frosts, not only is there *no running water* in the bed of the river for many miles, *unless in the weirs* from which the millraces are fed, and in a few deep pools as described before; but the whole volume of the water in the river falls away to a mere bagatelle. Some years ago (I think 1893, during an extreme drought) I passed *the whole river water* for three weeks through a 10-inch (drain) pipe on a quick fall, at a time when I was excavating for my second turbine wheel, &c., &c. Indeed, during the severest droughts, which occur in May, June, and July, the whole river water is *only capable* of condensing the steam engine and supplying water for dyeing and washing, *leaving no surplus* for motive power. Should any water be withdrawn from the millraces, as has been suggested for *fish passes* on the weirs during summer, the works on this river might as well *be closed down* at once, and at the same time if *all the water* were turned into the river during droughts it would not give the fish a chance like what they had formerly. I cannot conceive the country or the legislature trying the experiment of extinguishing our water rights for a very questionable development of fish. As large taxpayers and employers of labour, we deserve quite as much consideration as the proprietors of the fishing royalties.

I would suggest to the Commissioners to recommend to the Government that, inasmuch as the proprietors of fishing rights report that they are now unprofitable, the State should buy them up at their present value, and develop them, under the New Board of Agricultural Industries, by hatcheries and other scientific means, by State aid and in the interest only of the State, as has been done so successfully in the United States of America. It would then be found what rivers should be preserved and cultivated for breeding purposes, and what rivers would be *better left alone in the interest of large populations and industries*. To expend State money on the fisheries owned as they are at present by private individuals, is the purest protection, and bounty feeding, worthy of France and Germany, but quite contrary to British opinion to-day. These fishing royalties should be the property of the nation, and until they are so I for one protest against the attempt to render them profitable to their private owners at the national expense. In the meantime the millowners of the Maine River district would be quite willing that the Fishery Conservators should

erect and maintain gratings and fry guards *at their own expense* at the several works or mills, provided the Conservators give them sufficient *guarantee* that they would be *preserved in the full and uninterrupted* flow of water required for their wheels. I may remark that the Inspectors as well as the Conservators do not seem to have a definite idea of the device or fry guard required, as their order has varied from an orifice or mesh of ¼ to ½ and in some cases ⅝th of an inch. For my part I was required, and acted on the order, to provide a lattice with ⅝th-inch openings.

As to the cause of the falling off of salmon generally in the Coleraine district, I can prove that the fishing in the River Bann is too severe and close, very little chance being given by the scientific methods of the fisherman of to day to the ascending fish. So far as the River Bann is concerned—and this holds good of all Irish rivers—I think the fishing should be confined to the sea-shore at the river's mouth, and no netting or fixed engine in the rivers should be permitted. The rivers should be kept for *breeding only*, and for rod-fishing *under licence*. The latter might be objected to by the public, but the greater number of anglers are young men, inexperienced and thoughtless; and at the foot of Kellswater and in the River Maine into which it flows, these youths catch quantities of fry and smolts in the spring months on their line, and never think of returning them to the river—proud only of the big count in their basket. I would recommend that all anglers should have to pay licence, and they would then become more careful of the young salmon The last mile or so at foot of Kellswater and the Maine, from Lough Neagh to Cullybackey, has become of late years *infested with pike*, the ova of which were brought to the river some years ago by a thoughtless visitor. These pike have now attained a large size, and live and prey on the descending fry, as has been proved by many in the neighbourhood who caught them with bait or shot them, and found several fry undigested in their stomach. Another cause of destruction of thousands of salmon fry is that they are caught by the eel fishers in the "cochals" or tails of their nets along with the eels below Toome Bridge in the Bann. Many die before there is a chance of returning them to the river, but as the most gentle handling is necessary, and the eel fishers have no interest in saving them, the mode by which they are expelled and returned to the water is generally fatal to them Myriads of cormorants have lately become denizens of Lough Neagh, and are constantly found fishing at the river mouths. These are some of the causes of the shortage of salmon as far as the land is concerned (what happens in the deep sea I know not). The remedy is in *preventing poaching and pollution*, and in extensive and scientific *hatching and breeding*.

I would recommend that the R. I Constabulary should be required to assist and possibly direct the water bailiffs in the prevention of poaching inland.

As to the hatching, &c., I have experimented successfully in the propagation of trout ova myself, and I see no difficulty in the application of money, brains, and skill towards the successful increase of salmon in our large rivers and shores far beyond anything that has been known in the past. I cannot see that what has been done in Japan and the United States of America cannot be done in Ireland. With care and skill salmon should be as easily, and certainly as *cheaply produced as pigs, or as ducks and fowl by incubators*. I do not think our methods of treating the fry after hatching are as effective as they might be. Turning out the little fry after being fed artificially, without preliminary training, to fight the battle of life is rude and unscientific, and certainly wasteful. They must largely become the prey of the watchful pike and other voracious fish before they have learned to look for their food and avoid their enemies. Why not keep them in *artificially made channels parallel* with the *river*, and into which the river water is made to flow through fine sieves, meshes, or perforated gratings at inlet and outlet, but into which no voracious fish could enter. When they had become fairly large, strong, and fit, they should be taken to the river mouth, close to the sea, where they would have room and a good chance of life and an immediate and abundant change of feed. As to the *Fishery Bill* introduced by Mr. Seton Karr, and which has been read a second time and reported to the Committee on Trade, the millowners think that in the first place somewhat of a breach of confidence has occurred. Mr W. Moore, M.P., who represents our interests in this matter, made an arrangement with Mr. Karr, in March last that pending the report of the Viceregal Commission the Bill would not be prosecuted, and that in fact nothing would be done. In Mr Karr's absence Mr. Tomlinson unexpectedly got it through without a division. I think that its prosecution through the House in this manner is a slight on your Commission as well as most unfair to the millowners I object to the fourth and sixth clauses of the Bill, entailing such expense under heavy penalty on the millowners, and to clause eight, sending the appeal to the assizes—a tribunal costly in time and money. If any appeal were necessary I think the new Board of Agriculture and Industries might provide the necessary machinery at much less cost. I approve of clause nine, as in the case of Kellswater, salmon *should not and need not* be permitted to ascend beyond a mile from its junction with the Maine. The value of the material turned over annually in the fifteen water-driven mills on Kellswater is £500,000, and the annual wages paid therein £15,500.

The Kellswater millowners would agree that it be made compulsory on them to provide settling tanks to receive their waste dyes and chemicals, so as to ensure that the water of the river should be free from pollution.

XLV.

MEMORANDUM ON NETS AND TRAPS FOR FISH AS USED IN IRELAND.

[N.B.—*The numbers refer to the sketches at the end of the notes*].

In the following notes the material is divided into:—

A. DRAUGHT NETS.

B. GILL NETS (meaning thereby those nets which catch fish by the gill or head when they strike).

C. TRAPS.

D. TRAWLS.

CONTENTS.

A. DRAUGHT NETS:—

1. Ordinary Draught Net.
2. Draught Net for Pollen.
3. Half Tram.
4. Fixed Draught Net.
5. Mackerel Seine
6. Sweepers.
7. Ring Nets,
8. Purse Seine.
9. Snap or Cot Net.

B. GILL NETS:—

10. Spring Mackerel Drift Net.
11. Salmon Drift Net.
12. Hake Trammel.
13. Flat Fish Trammel.
14. French Trammel
15. Herring Drift Net.
16. Autumn Mackerel Net.
17. Anchored Gill Nets.

C. TRAPS.—

18. Stake Weir for Salmon.
19. Stake Weir for Sprats.
20. Eel Weirs and Coghills.
21. Salmon Bag Net.
22. Stone Salmon Weir.
23. Pole Net.
24. Drum Net.

D. TRAWLS:—

25. Beam Trawl.
26. Otter Trawl.

DESCRIPTION.

A.—DRAUGHT NETS.

1. Ordinary Draught Net.

Called also Seine, Drag Net, Foot Net, Wade Net, Tram, &c., used for salmon, sprats, herrings, &c.

Length, depth, and mesh vary according to circumstances.

The cork rope is always at the surface; the leaded foot rope on or near the bottom.

Mesh, when used for salmon, must not be less than 5½ inches, except where altered by bye-law.

A practice, where not prohibited by bye-law, is to begin to shoot a second net B. (*see sketch*) before the first A is completely drawn in.

2. Draught Nets for Pollen.

These are used in Lough Neagh, and have a long pocket of fine mesh net called a "poke."

They are fitted to sink and hauled into a boat.

These nets are also used to catch eels when congregating for migration.

3. Half Tram.

Used on same portions of the coast as Draught Nets; with one end fixed to the shore, the net is paid out to half its length by the boat, which is then anchored; the portion of the net A.B. (*see sketch*) acts as a stop net; the boat's crew wait until they see a fish leap, and then, paying out the remainder of the net in the direction B.C., haul it to shore.

4. Fixed Draught Net.

A net used on the same plan as above is known by this name in certain rivers.

If, as soon as the first net D. (*see sketch*) is fully paid out, a second net E. is begun to be shot, the passage of the fish is permanently stopped; this practice is in some districts prohibited by bye-law.

5. Mackerel Seine.

A Mackerel Seine is worked by a Seine Boat A. (*see sketch*) and a follower B, and is in general use during the Spring Mackerel Fishing in West Cork and Kerry.

Length of net frequently 150 yards; depth, 20 yards; mesh, 2 inches. It fishes at night.

The net is shot round a "school" of mackerel. The foot rope is then gathered in by a crew of a dozen men, thus preventing the escape of the fish the follower pulls all the time at a tow rope C. to keep the Seine Boat in position.

6. Sweepers.

When used for salmon this class of net (*i.e. 5 above*) is called a "sweeper."

Similar nets used for herrings are called "Trawls" on the Scotch coast.

7 *and* 8. Ring Nets and Purse Seines.

When provided with rings along the foot rope, through which the pursing line is rove, this class of nets (*i.e.* 5 *above*) are called "Ring Nets."

Nets of this description used in America are called "Purse Seines."

9. Snap or Cot Nets.

These are used between two cots or skiffs, which are kept apart by one man in each paddling, while one man in each holds the head line and foot line of the net. These men feel the fish strike the net, and by a quick and dexterous tightening of the foot line enfold the fish within it.

Snap nets are from 5 yards to 10 yards long.

B.—GILL NETS.

10. Spring Mackerel Drift Nets.

Each net is 64 yards long.

Fifty such nets make up a train for a large boat.

The nets are made of cotton, and tanned; mesh, $3\frac{1}{4}$ inches long, the net 120 meshes deep.

11. Salmon Drift Nets.

Nets of this sort are largely used in the Blackwater, Shannon, and Suir.

Length fixed by bye-law.

They are shot across the rivers by row boats, which drift with them.

Nets used are made of flax, and oiled; mesh, $4\frac{1}{2}$ to 5 inches long.

12. Hake Trammel.

Used in the sea off the South coast.

They are similar nets to 11, but are sunk to the bottom in deep water, and anchored.

13. Flat Fish Trammels.

Used on the East coast, and are similar to above in method of fishing, but are only a few meshes deep.

14. French Trammels.

These are used for all classes of fish at various places on the coast.

It is not really a Gill net. It is formed of Herring net, mounted very slack on the ropes. On each side of this fine net, and mounted on the same ropes, are nets with meshes of 9 inches, or 1 foot from knot to knot. The fish, passing through the large mesh on one side, carry a part of the slack of the fine net through the large mesh on the opposite side, and thus get entangled.

15. Herring Drift Nets.

These are fished like the Mackerel Drift Nets, but are sunk below the surface to the level the fish are found to be swimming at; this is arranged by shortening or lengthening the strops or stoppers. About 25 nets form a train for a large boat; mesh, generally about 2 inches long; net, 300 meshes deep.

16. Autumn Mackerel Nets.

These are often fished in the same manner as above; mesh, $2\frac{3}{4}$ inches; net, 220 meshes deep.

17. Anchored Gill Nets.

When small boats fish for herrings or mackerel, they usually anchor their nets, instead of drifting with them. Salmon gill nets are thus anchored on some portions of the coast, and gill nets, of very fine material, for pollen in Lough Neagh.

C.—TRAPS.

18. Stake Weir for Salmon.

A stake weir in its simplest form is shown in the sketch.

It must not project beyond low water mark, and the leaders must be removed, or a door be used, to prevent the trap fishing during the weekly close time.

19. Stake Weir for Sprats.

Similar weirs to above, of fine mesh, or built of wattles, are in some places used for sprats. These nets must be removed during the descent of salmon smolts.

20. Eel Weirs and Coghills.

The sketch shows an eel weir in its most simple form, and an alternative kind of net which is occasionally used, called a coghill.

21. Salmon Bag Net.

It is very much the same as a stake weir or fly net. It can be set in deep water, and is kept at the surface by corks and poles.

The leaders are removed during the weekly close time. This class of net is held in position by anchors.

22. Stone Salmon Weir.

The sketch shows the killing hatch or crib, and the Queen's Gap. The latter must be in the deepest part of the stream, and its sides parallel to the flow of the water.

23. Pole Net.

This is a large landing net, fitted with two handles, and usually employed for fishing the crib of a stone weir.

24. Drum Nets.

These are poaching nets, by which the fish pass in a mill dam is caused to act as a trap for salmon.

D.—TRAWLS.

25. Beam Trawl.

This net scrapes the bottom of the sea, chiefly for flat fish. The beam is supported by iron heads or runners, which keep the top of the bag 3 feet to 4 feet above the bottom, while the ground rope sweeps the sea floor.

It is towed along either by a sailing vessel or a steamer.

26. Otter Trawl.

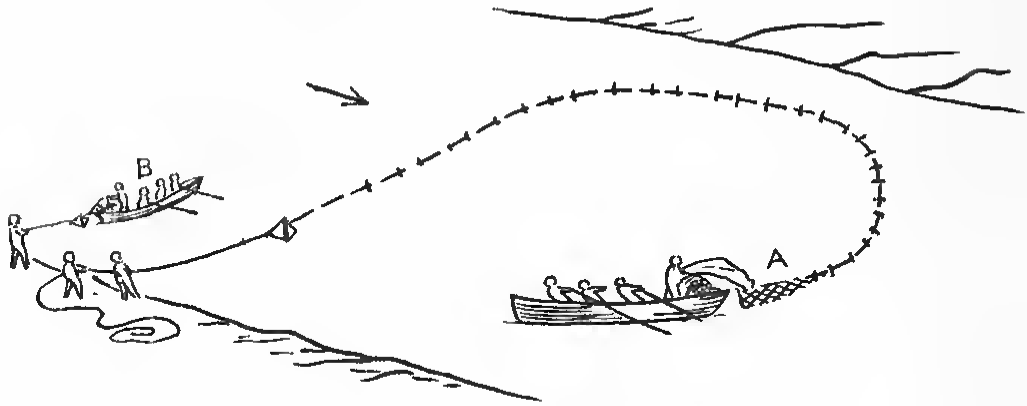
Used for purposes similar to above. There is no beam, and the mouth of the net is kept distended by otter-boards, which sheer outwards.

This class of net has been used for many years on the Irish coast, and recently it has been adopted in a modified form by all the large steam trawlers.

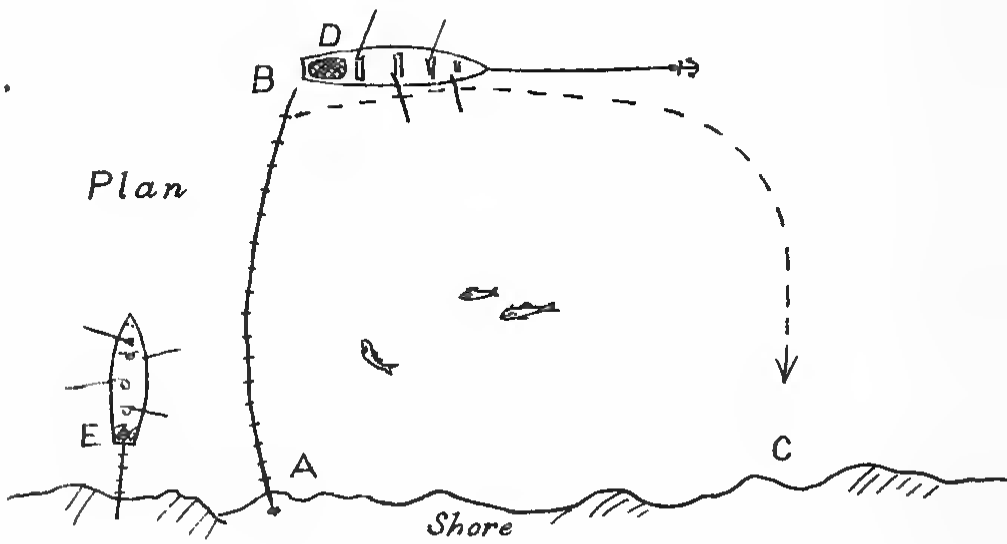
[N.B.—The figures refer to the foregoing printed Descriptions.]

A. DRAUGHT NETS.

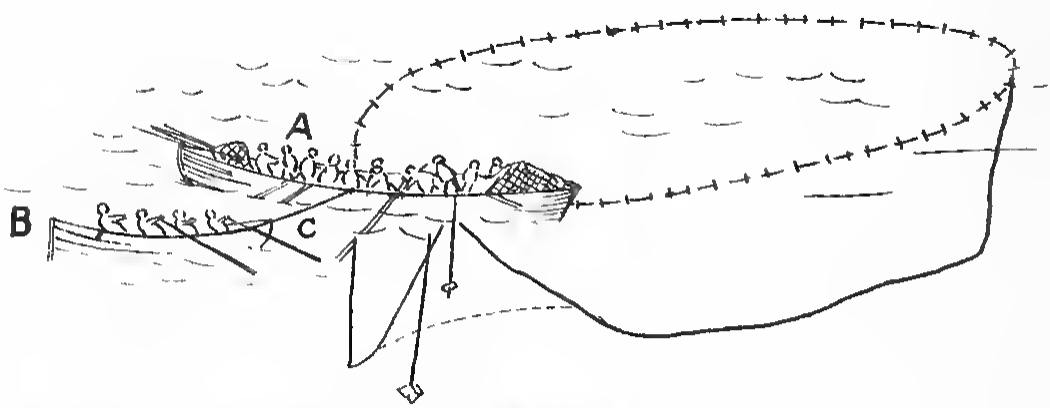
1.



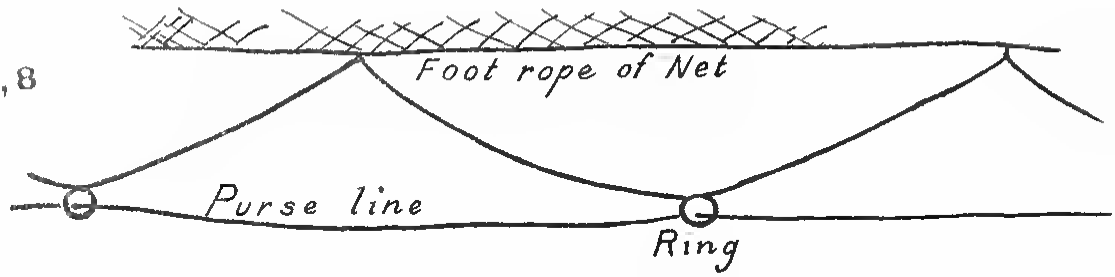
3.



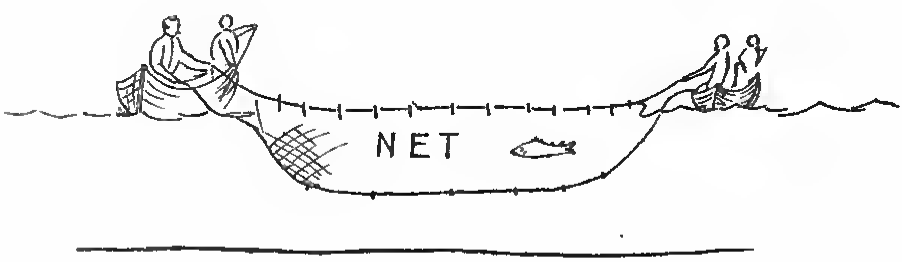
5.



7, 8

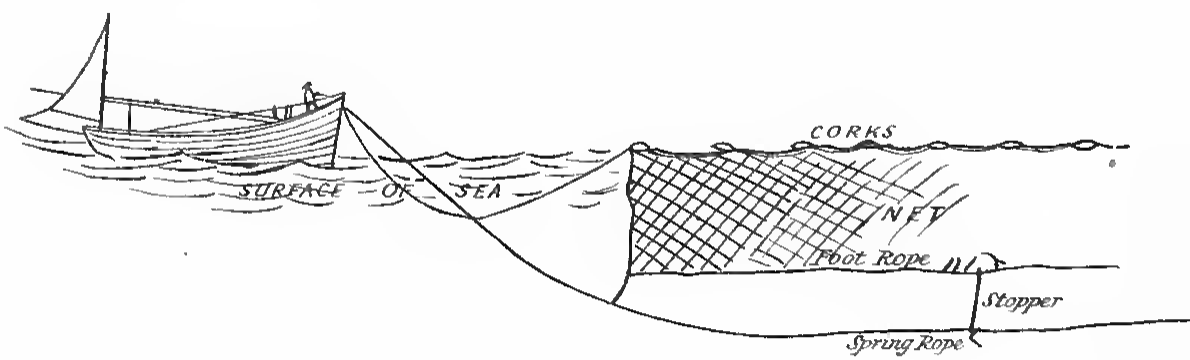


9.

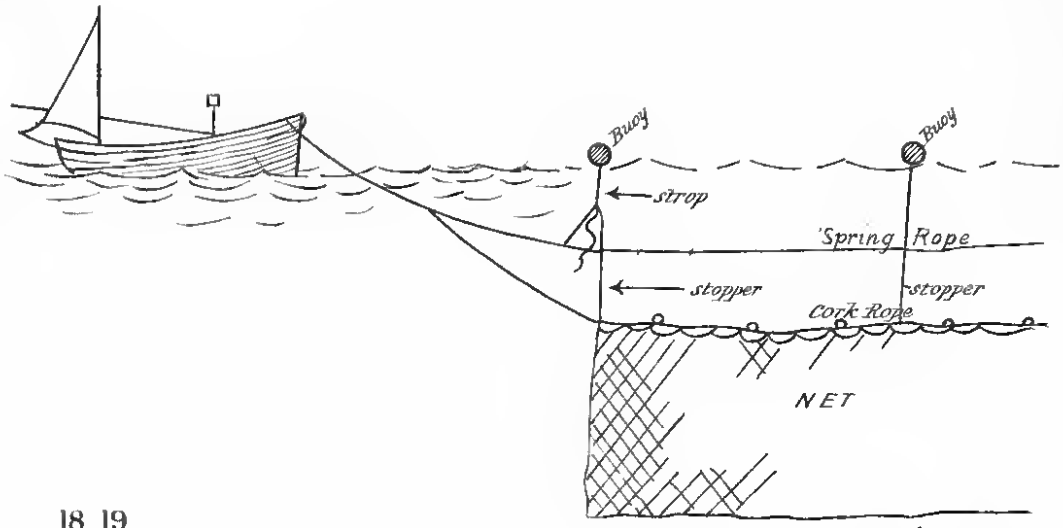


B. GILL NETS.

10.

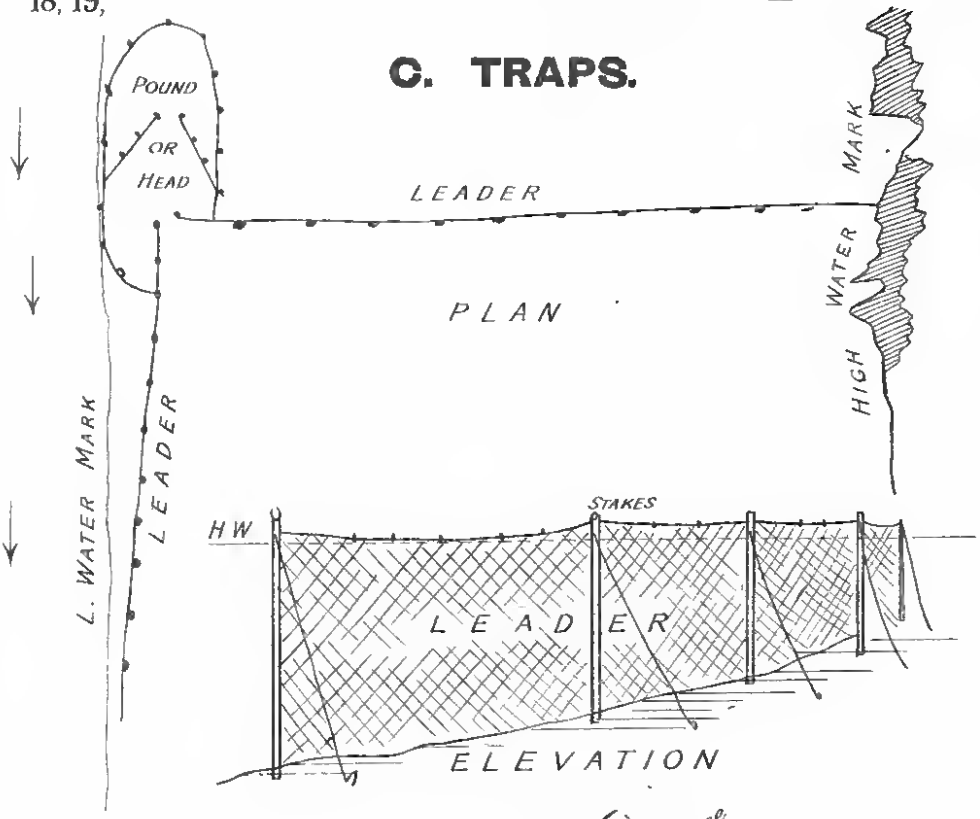


15,

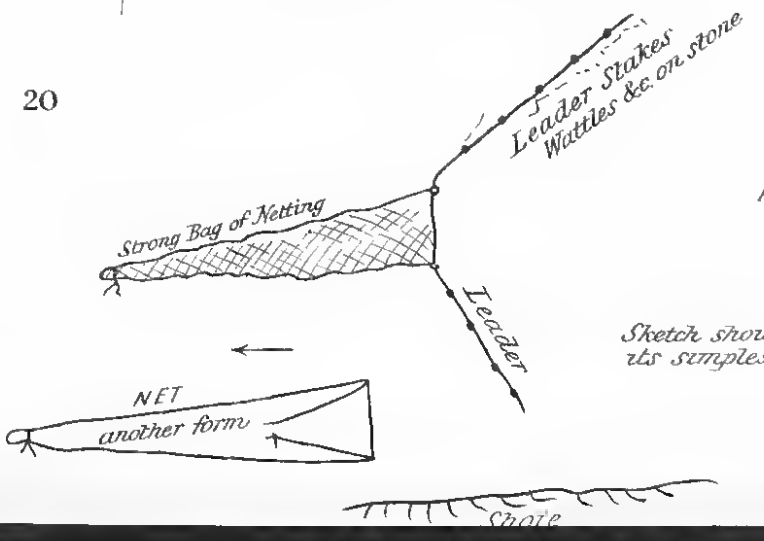


18, 19,

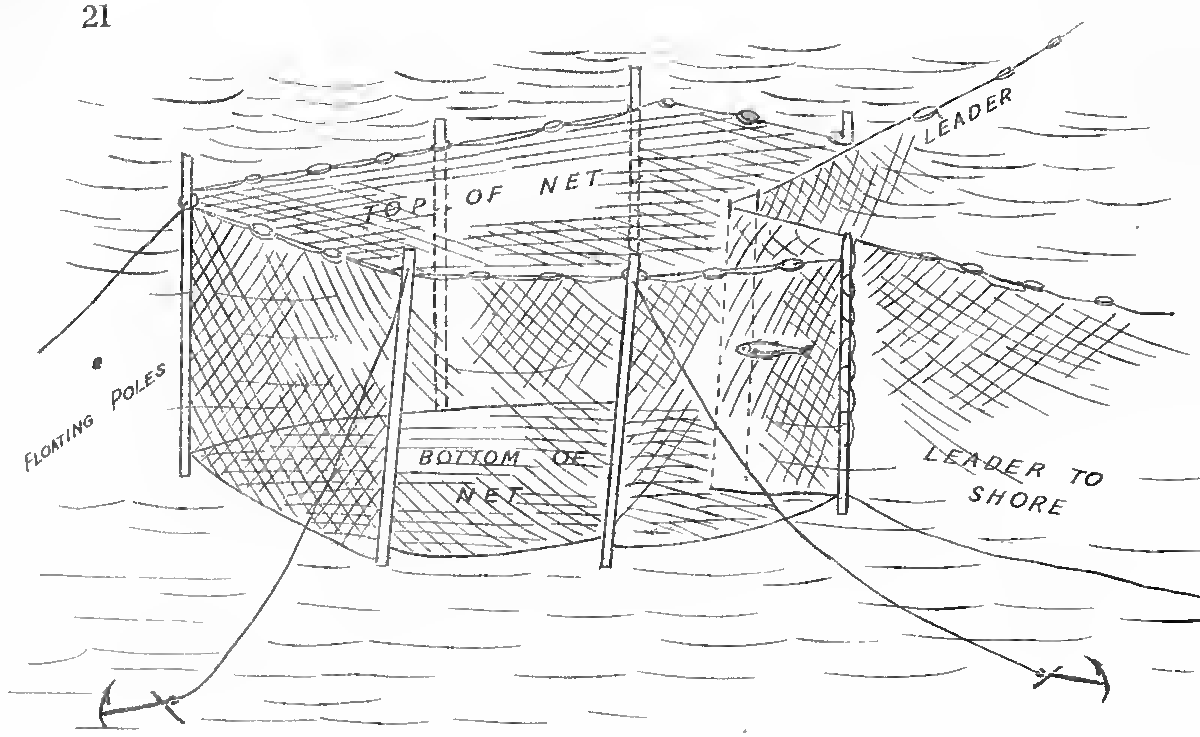
C. TRAPS.



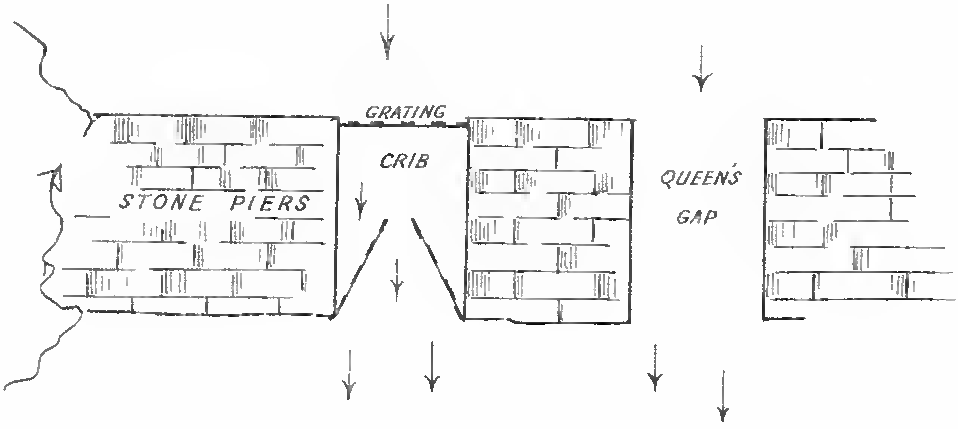
20



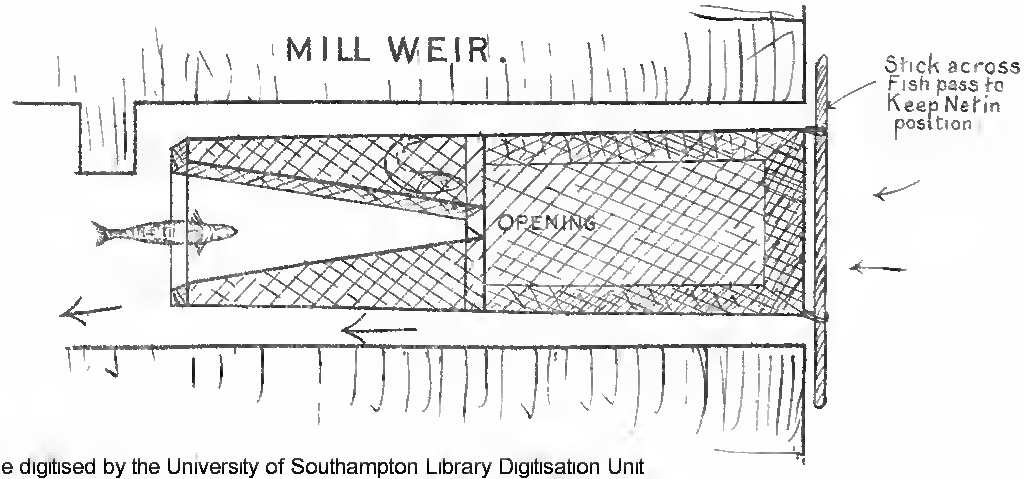
21



22

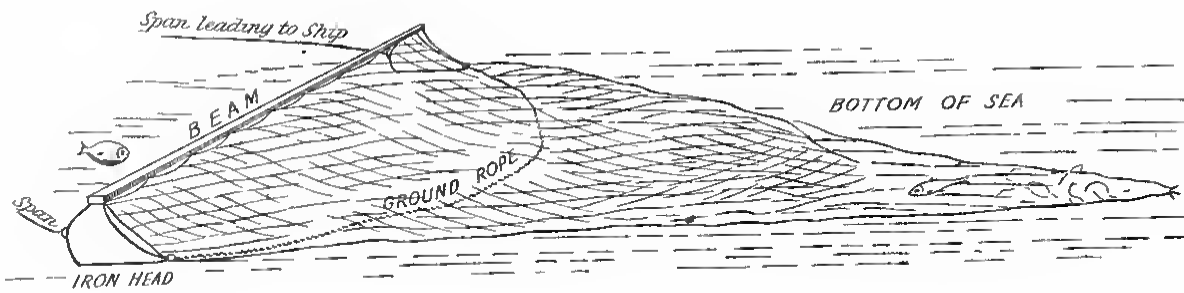


24

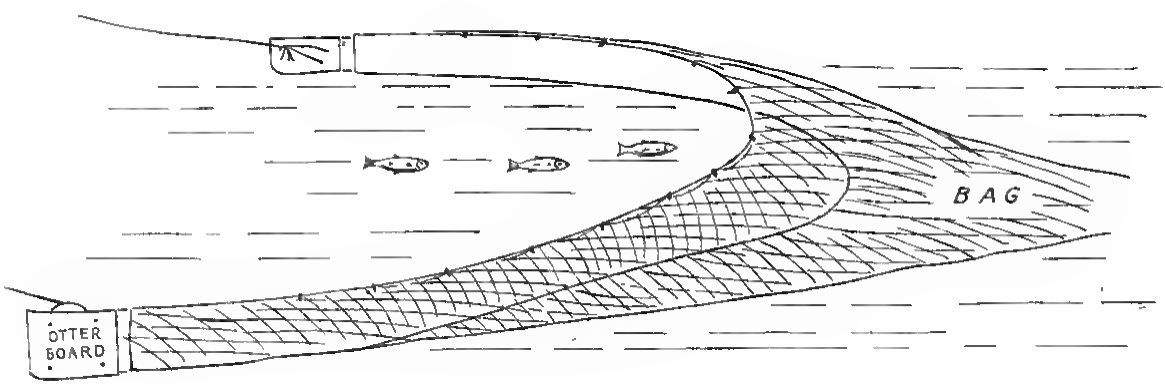


D. TRAWLS.

25



26



XLVI.

SECTIONS of the CALIFORNIA FISH AND GAME LAWS, referred to in the REPLIES of the FISH COMMISSIONERS of CALIFORNIA, to QUERIES on the SALMON FISHERIES.

(*See page* 25).

SECTION 628.

Every person who takes or catches, buys or sells, or has in his possession, any striped bass of less than three pounds in weight; every person who, at any time, takes, catches, or kills, any black bass except with hook and line; every person who takes, catches, or kills, or buys, sells, exposes, or offers for sale, or has in his possession any black bass, between the first day of January and the first day of July of each year, every person who take, catches, or kills, or buys, sells, or exposes, or offers for sale, or has in his possession, any lobster or crawfish between the fifteenth day of May and the fifteenth day of July of each year; every person who, at any time, buys, sells, exposes, or offers for sale, or has in his possession any lobster or crawfish of less than nine and one-half inches in length, measured from one extremity to the other, exclusive of legs, claws, or feelers, every person who, at any time, buys, sells, exposes, or offers for sale, or has in his possession any female crab; every person who, at any time, buys, sells, exposes, or offers for sale, or has in his possession any sturgeon of less than three feet in length, every person who takes, catches, or kills, or buys, or sells, offers, or exposes to sell, or has in his possession any fresh sturgeon between the first day of April and the first day of September of each year; every person who, by seine or other means, shall catch the young fish of any species, and who shall not return the same to the water immediately and alive, or who buys, sells, offers, or exposes for sale, or has in his possession any such fish, fresh or dried; every person who catches, takes, or carries away any fish from any pond or reservoir belonging to, or controlled by, the State Board of Fish Commissioners, or any person or Corporation, without the consent of the owner thereof, which pond or reservoir has been stocked with fish, every person who shall, at any time, except with hook and line, take or catch fish of any kind from any river or stream upon which a State or United States fish hatchery is in operation, is guilty of a misdemeanour, and is punishable by a fine not less than twenty dollars, nor more than five hundred dollars, or by imprisonment in the county jail in the county in which conviction shall be had, not less than ten days or more than one hundred and fifty days, or by both such fine and imprisonment. All the fines imposed and collected for any violation of any of the provisions of this section shall be paid into the "Fish Commission Fund." Nothing in this section shall prohibit the United States Fish Commission and the Fish Commission of this State from taking at all times, such fish as they deem necessary for the purposes of artificial hatching. It shall be no defence in a prosecution for a violation of any of the provisions of this section that the fish were caught or taken outside or within this State.

SECTION 629.

Any person or persons, corporation or corporations, owning in whole or in part, or leasing, operating, or having in charge any mill race, irrigating ditch, or canal taking or receiving its waters from any river, creek, stream, or lake in which fish have been placed or may exist, shall put, or cause to be placed, and maintain, over the inlet of said ditch, canal, or mill race, a wire screen of such construction and fineness, strength, and quality, as shall prevent any such fish from entering such ditch, canal, or mill race, when required to do so by the Fish Commissioners. Any person or corporation violating the provisions of this section, or who shall neglect or refuse to put up or maintain such screen, shall be guilty of a misdemeanour, and upon conviction thereof shall be punished by a fine of not less than ten dollars, nor more than one hundred dollars, and may be imprisoned at the rate of two dollars per day until such fine be paid or satisfied; provided that the continuance from day to day of the neglect or refusal, after notification, in writing, by the Fish Commissioners, shall constitute a separate offence.

SECTION 634.

Every person who, between the tenth day of September and the sixteenth day of October of each year, takes or catches, buys, sells, offers, or exposes for sale, or has in his possession any fresh salmon; every person who, between the fifteenth day of October and the fifteenth day of November of each year, takes or catches any salmon above tide water; every person who shall set or draw, or assist in setting or drawing any net or seine for the purpose of taking or catching salmon, shad, striped bass or sturgeon in any of the waters of the State, at any time, between sunrise of each Saturday and sunset of the following Sunday; every person who for the purpose of catching salmon, shad, striped bass, or sturgeon, in any of the waters of the State, fish with or use any seine or net, drag-net, or parangella, the meshes of which are, when drawn closely together and measured inside the knot, less than seven and one-half inches in length, is guilty of a misdemeanour, and is punishable by a fine not less than two hundred dollars, or by imprisonment in the county jail in which the conviction shall be had, not less than one hundred and fifty days, or by both such fines and imprisonment, and all the fines imposed and collected for any violations of the provisions of this section shall be paid into the "Fish Commission Fund." In the construction and meaning of this section, the limits of tide-water in the Sacramento River shall be deemed to extend from its mouth to the City of Sacramento; in the San Joaquin River, from its mouth to the Southern Pacific Railroad bridge near Lathrop, in San Joaquin County; in Eel River, in Humboldt County, from its mouth to East Ferry, above the town of Fortuna; in the Klamath River, to a point on the river north of the residence of James M'Garvy; in Smith River in Del Norte County, from its mouth to Higgins' Ferry. Nothing in this section shall prohibit the United States Fish Commission and the Fish Commission of this State from taking, at all times, such fish as they deem necessary for the purposes of artificial hatching. It shall be no defence in a prosecution for the violation of any of the provisions of this section that the fish were caught or taken outside or within this State.

SECTION 635.

Every person who shall place or cause to be placed in any of the waters of this State, dynamite, gunpowder, or other explosive compound, for the purpose of killing or taking fish, or who shall at any time take, procure, kill, or destroy any fish of any kind by means of explosives; every person who places or allows to pass, or who places where it can pass, into any of the waters of this State, any lime gas, tar, cocculus indicus, sawdust, shavings, slabs, edgings, mill or factory refuse, or any substance deleterious to fish is guilty of a misdemeanour, and is punishable by a fine

of not less than two hundred and fifty dollars, or imprisonment in the county jail in the county in which conviction shall be had, not less than one hundred and fifty days, or by both such fine and imprisonment.

SECTION 636.

Every person who shall cast, extend, or set any seine or net of any kind, for the catching of any fish in any river, stream, or slough of this State, which shall extend more than one-third across the width of said river, stream, or slough, at the time and place of such fishing; every person who shall cast, extend, set, use or continue, or who shall assist in casting, extending, using or continuing, "Chinese shrimp or bag net," or a net of similar character, for the catching of fish in the waters of the State, every person who shall cast, extend, set, use, or continue, or have in his possession, or who shall assist in casting, extending, or using "Chinese sturgeon lines," or lines of a similar character; every person who shall set, use, or continue, or shall assist in setting, using, or continuing any pound, weir, set net, trap, or any other fixed or permanent contrivance for catching fish in the waters of this State—and every net shall be considered a set net that is secured in any way and not free to drift with the current or tide—is guilty of a misdemeanour, and is punishable by a fine of not less than one hundred dollars, or by imprisonment in the county jail, in the county in which the conviction shall be had, not less than fifty days, or by both such fine and imprisonment, and all the fines imposed and collected for any violation of any of the provisions of this section, shall be paid into the "Fish Commissioners' Fund."

XLVII.

CORRESPONDENCE between the CHAIRMAN of the COMMISSION and the VICE-PRESIDENT of the DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION on the subject of INLAND FISHERIES.

Pembroke House,
Upper Mount-street,
Dublin, *24th May*, 1900.

SIR,—The Commission appointed by His Excellency the Lord Lieutenant, for the purpose of inquiring into the condition of the Irish Inland Fisheries, over which I have the honour to preside, has now taken evidence as to the state of those fisheries in all the principal waters, rivers, and estuaries of Ireland.

The Report has not yet been formulated nor discussed in detail; but the evidence has brought into prominence some matters in reference to which I take the liberty of addressing at the earliest opportunity a letter to your Department, which has now absorbed the powers and duties of the Inspectors of Irish Fisheries.

I am convinced that any recommendations which the Commissioners may suggest will prove abortive unless funds are provided for carrying them out.

An obvious cause of the present unsatisfactory condition of the fisheries is the want of efficient preservation in the annual and weekly close seasons—and especially the destruction of spawning fish in the rivers and estuaries.

Under the present system the preservation is carried out in each district by water bailiffs appointed and paid by the Conservators.

The funds for the payment of those bailiffs, derived mainly from licence duties, are so wholly inadequate that it is impossible to employ a sufficient number of them or to pay such salaries as will secure the services of competent and independent men. For the same reason there is in most places no sufficient supervision of the bailiffs themselves.

The employment of competent and independent bailiffs is undoubtedly essential, and the very valuable free fishery rights enjoyed by the public in Ireland afford a cogent reason for the application of public funds for this purpose.

Much evidence has been laid before the Commission in reference to the promotion, establishment, and maintenance of hatcheries for salmon. For the same reasons as those applicable to the last paragraph it is obvious that such hatcheries cannot be provided or maintained out of the present available funds.

A large body of evidence has also been brought before the Commission in reference to the capture of salmon off the mouths of rivers in an illegal manner and at prohibited times. There are no means at present of controlling this illegality, and it is only by the provision of steam launches or some such vessels at suitable places round the coast that a remedy can be obtained.

The question of the removal of obstructions, natural and artificial, to the ascent of fish, and the provision of efficient fish passes, is one which can only be dealt with by an efficient engineer skilled in such matters. I would suggest that this point should be borne in mind when arrangements are being made for the staff of the Department.

I wish, therefore, to suggest that the Irish Inland Fisheries may not be forgotten in the allocation of funds under the control of your Department.

I have the honour to remain,
Your obedient servant,
SAMUEL WALKER.

To the Right Hon. Horace Plunkett, M.P.

Irish Office,
Old Queen-street, S.W.,
25th May, 1900.

MY LORD,—I beg to acknowledge the receipt of your letter of the 24th instant, and to state that I will bring the claims of the Irish Inland Fisheries for assistance before the Board of Agriculture when the question of the allocation of the funds placed at the disposal of the Department in respect of Agriculture and other rural industries is under consideration.

I will bear in mind your suggestion in regard to the desirability of appointing to the staff of the Department an engineer skilled in hydraulics, with a view to the removal of obstructions, natural and artificial, to the ascent of fish in the rivers.

I have the honour to be,
My Lord,
Your obedient servant,
HORACE PLUNKETT.

The Right Hon.
Lord Justice Walker.

DUBLIN: Printed for Her Majesty's Stationery Office,
By ALEX. THOM & CO. (Limited), 87 88 & 89, Abbey-street,
The Queen's Printing Office

on Educational Subje

ARY AND PUBLIC ELEMENTARY

ETHOD OF TEACHING

GUAGE TEACHING IN BELGIUM,

SCHOOLS IN BADEN

SCHOOLS IN PRUSSIA

AND SECONDARY EDUCATION IN FRANCE

EDUCATION IN WALES, AND THE ORG

Publications:—

I. C DARS. Imp. 8vo Cloth Price 15s. per vol.

Domestic. William and Mary Vol III. 1691–1692

Venice. Vol. X. 1603–1607

Close Rolls. Edward I. Vol I 1272–1279.

Lists and Indexes No XI. Foreign Accounts enrolled on the Great Rolls of the Exchequer. Price 10s.

III, Privy Council of England. Acts of the. New series. Edited by J. R. Dasent, M.A. Vol. XXI. 1591–. Price 10s.

Chronicles of England. Royal 8vo Half bound. Price 10s. per vol.—

Year Books of Reign of Edward III. Vol XVI. Second part.

Scottish:—

Privy Council of Scotland. Vol XX. 1591. Price 15s.

Irish:—

Ulster. A.D. 1379–1541. 640 pp. Price 10s.

Military:—

Price 1s.

Price 4s. 6d., or interleaved 5s. 6d.

Price 1s. 6d.

Second Edition. Price 1s. 6d.

Coast. Report on. Compiled by the late Lt.-Col. H. P. Northcott, C.B. Price 6s.

edition. Price 5s.

1899 Price 1s. 6d.

Hydrographical:

Cable Route. Report on Soundings of H.M.S. Egeria.' Price 9

1900 Price 3s. 6d.

Ordnance:—

and Kinross Sheets and parts of sheets 32 and 38. By Sir Arch. Geikie. Price 5s 6d.

Local Government Board—

the Farnsworth Registration Sub-District, and the Bolton Registration Report on. Price

Nelson and Colne Union District. Report on. Price

Emigrants' Information Office, 31 Broadway Westminster, S.W., viz.—

Handbooks for April, 1900 8vo Wrapper.

No. 1. Canada 2 New South Wales 3 Victoria. 4. South Australia 5 Queensland. 6 Western Australia 7 Tasmania 8 New Zealand 9 Cape Colony 10 Natal. Price

No. 11 Professional Handbook dealing with Professions in the Colonies. 13. Emigration Statutes and General Handbook. Price

No. 13 (viz, Nos. 1 to 12 in cloth).

Circular Reports 1899 Summary of America, North and South 1900

Emigrants Information for —Argentine Republic, price California, price Federated Malay States Jan, 1900, price Maryland price South African Republic, price 3d West Indies price 6d.

Laws. Practical Arrangement of the Laws relating to the Excise, &c. &c. By Solicitor of Inland Revenue. 2nd edition. 2 vols.

Foreign Office—

by Treaty map of By Sir Edward Hertslet, K C B Three vols.

Commercial Treaties Hertslet. A complete collection of Treaties Foreign Powers so far as they relate to Commerce and Navigation, &c. &c. By Sir Edward Hertslet. &c. &c Vols I to XX

State Papers British and Foreign Vol 80 General Index chronologically and alphabetically arranged. Vols 65 to 79 (1873 to 1888). Vol 81 1888–9 82 1889–1890 83 1890 84 1892–3, 86 1893–4, 87 1894–5 88 1895–6.

Board of Trade Journal, of Tariff and Trade Notices and Miscellaneous Commercial Information Published monthly

Index to Vols. 1 to 14, July, 1886 to June 1893 And to Vols. XV to XX

Royal Botanic Gardens. Bulletins of Miscellaneous Information Volume for 1899 parts, 1899, price 4d.

Port of London Commission Minutes of Evidence

IRISH INLAND STEAMERS COMMISSION.

APPENDIX

TO

THE REPORT

OF

THE COMMISSIONERS.

PART III

DOCUMENTS.

Presented to both Houses of Parliament by Command of Her Majesty.

DUBLIN

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,

BY ALEXANDER THOM & CO. (LIMITED).

And to be purchased either directly or through any Bookseller, from
HODGES, FIGGIS, and Co. (Limited), 104, Grafton-street, Dublin; or
EYRE and SPOTTISWOODE, East Harding-street, Fleet-street, E.C.; and
32, Abingdon-street, Westminster, S.W.; or
JOHN MENZIES and Co., 12, Hanover-street, Edinburgh; and 90, West Nile-street, Glasgow.

1907.